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WORLD OIL

SPECIALIZED FOR EXPLORATION, DRILLING, PRODUCING OPERATIONS AND MANAGEMENT

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PR

Forecast-Review Issue

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Outlook for 1955:

- Record 52,612 wells drilled, footage of 214⅔ million.
- All-time high production of 6.5 million barrels daily.

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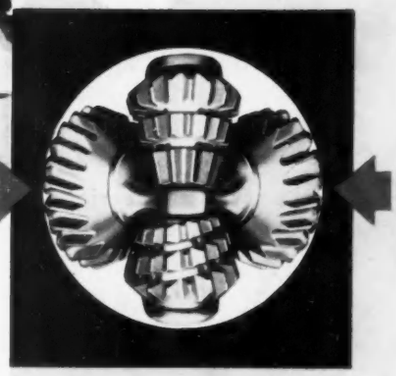

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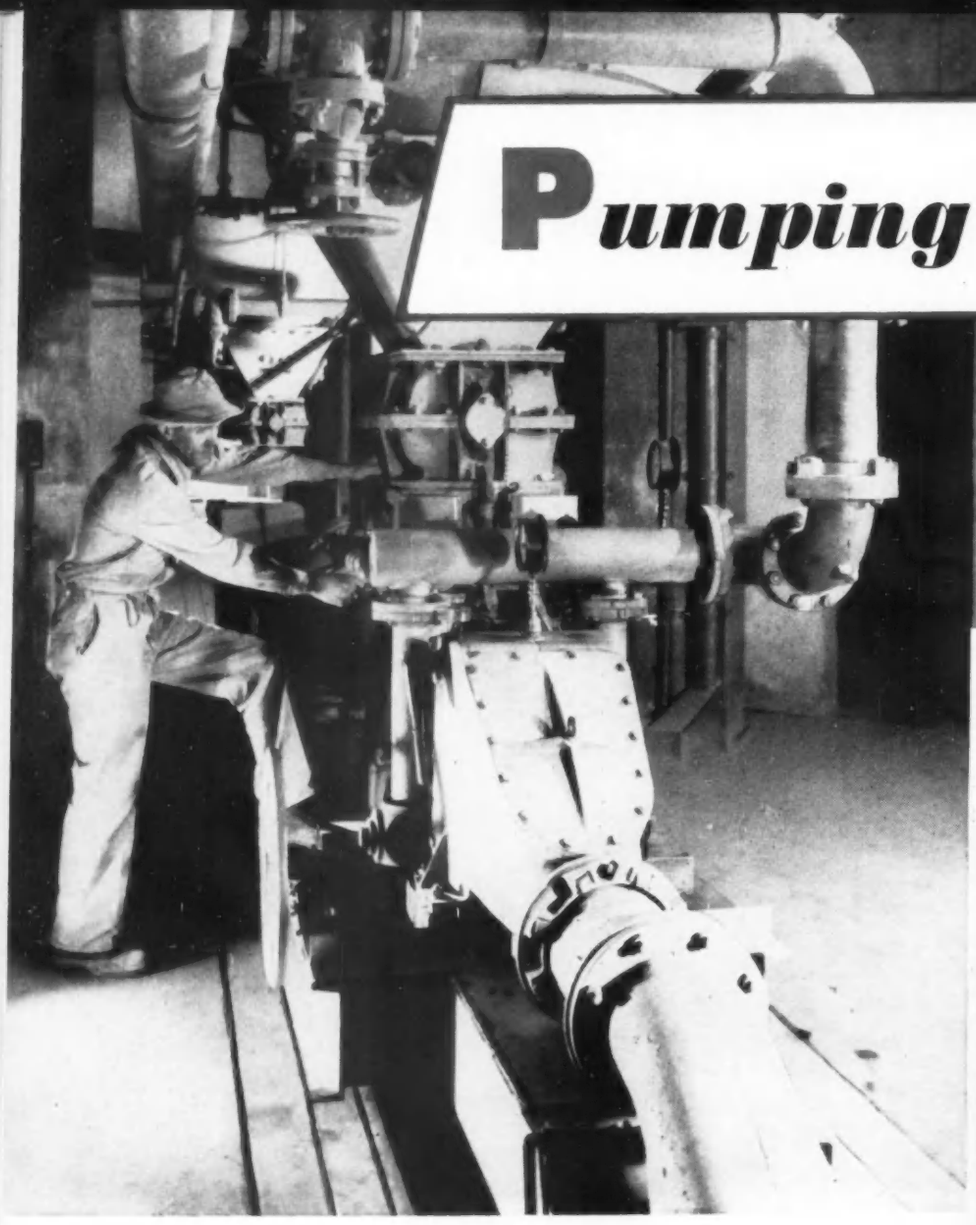

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WORLD OIL

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Vol. 140, No. 3

February 15, 1955

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a quick look at WORLD OIL THIS ISSUE

BUSY OIL MEN: To help you put first things first, scan these time-saving digests on this and the following pages, checking ☑ those you want to read first.

CURRENT OUTLOOK ARTICLES

☐ **Supply and Demand.** The oil industry of the U. S. will encounter in 1955 a demand for all oils 3.0 percent greater than that of 1954. Exports will decline further, but domestic demand will be up 4.0 percent. The improvement in total demand will provide markets for larger supplies, and there will be increases in domestic production of crude oil and natural gas liquids, as well as larger imports of crude and products. Similarly, a higher level of crude runs to stills at refineries will be required in meeting the requirements for products. It is forecast that U. S. crude production will need to be 3.2 percent higher in 1955 than in 1954, while production of natural gas liquids is expected to rise 4.8 percent.Crude runs to stills will need to be 3.0 percent above last year.

Increases in demand for the major refined products will be in line with the expected 3.0 percent over-all increase. Total demand for gasoline will be 2.2 percent

Turn the Page ➧

higher in 1955 than in 1954, and there will be gains of 2.8 percent for kerosine, 4.4 percent for distillate fuel oil, and 1.1 percent for residual fuel oil.....Page 70

☐ **Exports and imports** in 1955 will continue the trend established in 1947 when the U. S. became a net importer of petroleum. The U. S. will have the most unfavorable balance of foreign petroleum trade in its history in 1955 with net imports rising to 833,000 barrels daily. Total imports are expected to average 1,126,000 barrels daily, up 5.9 percent over 1954, while exports are expected to decline 18.4 percent to an average of 293,000 barrels daily.....Page 80

☐ **Petroleum Prices.** The outlook for petroleum industry prices in 1955 is hopeful following market troubles in 1954. Prices generally are now more stable after having shown weakness last year. Unstable markets of 1954 were due to faltering demand for oils and failure of the industry to cut back crude production and refinery runs promptly to stay in line with market requirements. Prices of refined products weakened and threatened to pull down crude prices. But in late 1954, a better supply and demand balance improved product prices; crude prices are generally the same as when decontrolled in 1953. See.....Page 82

☐ **Stocks of Oils.** U. S. stocks of crude and refined oils are generally satisfactory in early 1955, having shown no material net increase during 1954. They had increased sharply during 1953 and were at high levels at the beginning of 1954, in relation to prevailing market demand. There is now a higher plane of demand for petroleum products, and in relation to it, the present inventories are not generally excessive. The stocks of all oils at the end of 1954 were equivalent to 89 days' requirements at the rate of demand in 1954. Stocks on hand at the close of 1953 had been equal to 91 days' supply at the rate of demand during 1953. Crude stocks declined during 1954 and the 260 million barrels held at the end of the year represented 37 days' supply, compared with 276 million barrels or 39 days' supply held a year previously.....Page 84

☐ **Oil Using Units.** The sharp upward trend which has existed since World War II in motor vehicles, tractors, diesel locomotives, home oil burners, and natural gas customers in the U. S. is expected to continue. Consequently more oil and gas will be needed. Turn to .....Page 88

☐ **Refinery Operations.** The squeeze between prices and costs continues. Daily capacity continues to mount. At the end of 1952 capacity was 7,585,000 barrels. At 1953's close it was 8,079,000 barrels. And at the end of last year it was 8,347,000 and still growing. Daily average of crude runs was 6,953,000 during last year compared with 6,999,600 for 1953. For a roundup of refinery operations and the outlook, turn to..Page 92

EXPLORATION ARTICLES

☐ **Exploration Record.** The determined effort that has always characterized the U. S. petroleum industry's search for new oil and gas sources was in even greater evidence in 1954. The nation's wildcatters, for the twelfth consecutive year, boosted their activities to a new all-time high. The year's 11,983 exploratory attempts went into the records as a new annual peak. But they are destined to be overshadowed by the more than 12,000 tests scheduled for 1955. This increasing exploration trend promises to soon reach four times the prewar rate of little more than 3000 tests annually. Along with the continuing step-up of operations, there has been an encouraging improvement in the amount of success enjoyed, as better geophysical tools and techniques have been developed and more widely used as a basis for locating wildcats.....Page 95

☐ **Geophysical Crews.** Last year's U. S. geophysical and core drilling operations closed out on a downward trend. This general slackening included a 43.5 percent drop in core drilling crews in operation, a 5.2 percent decline in seismic activity, and a 4.6 drop in gravity surveys. For full details on the domestic exploration activity, turn to.....Page 100

☐ **Liquid Hydrocarbon Reserves.** Unusually high drilling activity during 1954 showed a big impact on recoverable reserves. The year-end total for all liquid hydrocarbon reserves stood at an all-time high of 36.1 billion barrels. This included 30.3 billion barrels of crude oil plus 5.8 billion barrels of natural gas liquids. The industry discovered 1.6 barrels of oil for every barrel it produced last year. Texas now has one-half the nation's proved reserves and accounted for more than one-third of the reserves proved up last year. See..Page 102

☐ **Natural Gas Reserves.** More gas was discovered than produced during 1954 in the U. S. This has brought the industry's total recoverable gas reserves to an all-time high of 221.5 trillion cubic feet. More than 19 trillion cubic feet were found, 9.4 trillion cubic feet were produced, and 400 billion cubic feet were put in storage. This gives the U. S. a net gain in reserves of 10.1 trillion cubic feet for the past year. See..Page 110

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DRILLING ARTICLES

☐ **Drilling Forecast.** Record drilling activity is expected in 1955. Both wells completed and footage drilled are seen as exceeding the surprisingly high level of 1954 activities. WORLD OIL's annual drilling forecast predicts the completion of 52,612 wells, 710 more than last year, and the drilling of 214⅔ million feet of hole, 5 million more than in 1954. For this year's drilling forecast, see.....**Page 115**

☐ **Purchases of Equipment.** Large equipment sales are predicted for 1955. A survey shows that U. S. contractors and producing companies expect to purchase more drilling and producing equipment in 1955 than in 1954. For more about this survey on equipment purchasing, turn to.....**Page 122**

☐ **Tax Law Changes.** Recent tax law changes may make it advantageous to replace equipment more frequently than in the past. Larger depreciation charge-offs in the first few years of the life of new equipment are now possible through optional use of two new depreciation methods in addition to the long-employed straight-line technique.....**Page 124**

☐ **Owners of New Wells.** Most of the U. S. wells are drilled by thousands of small operators. During 1954 the 23 largest producing companies drilled only 21.9 percent of the wells in contrast with drilling more than 23 percent in three preceding years.....**Page 126**

☐ **Drilling Methods.** Rotary rigs are accounting for an increasing portion of U. S. drilling. During 1954 an estimated 85 percent of the U. S. wells were drilled by the rotary method, compared with only 67 percent during 1954. Turn to.....**Page 126**

☐ **Rigs in Operation.** It required fewer rigs to drill more wells and more footage in the U. S. during 1954—an outstanding job for the drilling branch of the industry. On the average it took 4635 rigs per month to drill 51,902 wells in 1954 compared to 4784 rigs to drill 49,039 wells in 1953. Footage drilled indicates faster and deeper drilling. Drilling gains have been noted in West Texas, Kansas, Illinois, and South Louisiana. Drilling declined in Pennsylvania, California, New York and Indiana. See.....**Page 128**

☐ **Penetration Rates.** Faster penetration rates have made possible far more wells and footage drilled in the U. S. although fewer rigs are in use than a few years ago. Average footage drilled per rig in operation rose to 45,200 feet during 1954, nearly double the 1946 and 1947 rates. Turn to.....**Page 130**

☐ **Drilling by Contractors.** Drilling contractors are now drilling approximately twice as many wells and more than double the amount of footage they drilled in 1946. They did an estimated 92.5 percent of the 1954 U. S. drilling, which indicates they drilled 48,009 wells and 194 million feet of hole.....**Page 133**

☐ **Contractor Rig Ownership.** A large number of contractors own the rigs engaged in the contract drilling business in the U. S. Approximately three-fourths of the contractors own less than five rigs each and many own only one rig apiece. See.....**Page 133**

☐ **Drilling depth records** fell in five areas in 1954. New records were set in West Texas, New Mexico, the Texas Gulf Coast, Montana, and West Virginia. However, the world record depth of 21,482 feet reached by a California well in 1953 still stands. Active drilling is in prospect for 1955 and new drilling depth records doubtless will be set in some districts.....**Page 136**

PRODUCTION ARTICLES

☐ **Artificial Lift.** A total of 24,686 oil producing wells in the U. S. will be put on artificial lift for the first time during 1955. While this figure continues on a high plane, it is 2258 wells below last year's figure of 25,439. These figures reflect the trend established in 1954 of completing a higher percentage of flowing wells and keeping them flowing. Turn to.....**Page 151**

☐ **U. S. Crude Production.** Estimated U. S. crude production in 1955 will reach 2,386,000,000 barrels on daily average production of 6,537,000 barrels. That is 202,173 barrels a day more than 1954 production or a 3.1 percent increase. The expected 1955 production will be worth more than $6.5 billion at the wells on the basis of present prices. For more details on how each state fared production-wise in 1954, see.....**Page 152**

☐ **Natural Gas Liquids.** U. S. producers of natural gas liquids can gain encouragement from the prospect of higher demand for their products in 1955. The markets are expected to absorb an increase of about 4.8 percent in production of these products extracted from natural gas. Production of 718,000 barrels daily in 1954 is forecast, an increase of 43,000 barrels or 4.8 percent over 1954. The output of 675,000 barrels daily in 1954 was 1.9 percent above 1953.....**Page 160**

☐ **Natural Gas Production and Use.** Industry marketed 8.7 trillion cubic feet in 1954 and demand continues to mount. Marketed output has doubled since 1946 and trebled since 1941. Fifty-two percent of the marketed production, or 4.5 trillion cubic feet, was consumed in states other than those in which it was produced, which reflects the growth of interstate transmission lines. More than 1 million new customers gained access to the fuel during 1954, bringing the total to 27,350,000, not counting industrial users.....**Page 162**

☐ **Producing Oil Wells.** An increase of 12,949 producing wells in the U. S. in 1954 brought the total

to 514,808, a new high. The percentage gain in producing wells in 1954 was 2.5 percent or about the same as it was during 1953. Average daily production per oil well in the U. S. dropped slightly to 12.3 barrels in 1954 from approximately 13 barrels daily for the three previous years. This decrease reflected a slight decline in U. S. crude production along with the increase during the year in the number of wells on production. Turn to.....**Page 170**

☐ **Producing Gas Wells.** This new feature shows the number of gas and gas-condensate wells in the U. S. by states and by years. There was a total of 70,686 wells producing gas and condensate in the U. S. at the end of 1954. This is an increase of 1468 over a year previously. This gain occurred while 4038 new productive wells were completed, indicating that 2570 gas and condensate wells were abandoned during the year, a normal number.....**Page 176**

☐ **Producing Depth Records.** Seven area marks were replaced during 1954 though none threatened the U. S. record held by Richfield Oil Corporation's 17,892-foot producer in California. Three of the new section record-holders, all drilled by Shell, marked the first production for their respective states....**Page 178**

☐ **LPG Sales.** The upswing is continuing. Sales of liquefied petroleum gas passed another milestone in 1954 with a healthy increase in volume over 1953. And the outlook in 1955 is even better with the general upturn in business conditions.....**Page 182**

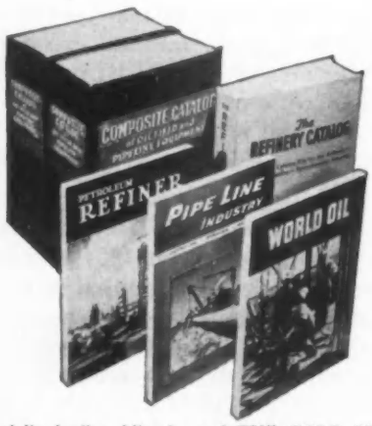
INTERNATIONAL ARTICLES

☐ **World crude production** will increase to a new high of 14,523,000 barrels daily in 1955, a gain of 827,000 barrels or 6 percent over the record output of 1954, according to WORLD OIL's forecast. U. S. production will increase 3.2 percent, and output of other countries will rise 8.5 percent, in line with the vigorous growth of other postwar years.....**Page 97**

☐ **World crude reserves** at the end of 1954 reached a new high of 153,308,573,000 barrels, a gain of 16,431,091,000 barrels over the end of 1953. Increases in reserves in the Middle East accounted for almost 80 percent of the increase recorded during 1954, giving this area estimated reserves of 92 billion barrels or 60 percent of the world's total. Significant additions to reserves also were made in Western Europe and Canada. See .....**Page 204**

☐ **Drilling Outside U. S.** Record well completions are likely for the free world areas outside of the U. S. during 1955. It is expected that approximately 6775 wells will be drilled in these areas in 1955, a gain of 420 wells over 1954 completions. Western Canada will account for nearly half of the increase. New discoveries made in 1954 will encourage activity in many other countries.....**Page 208**

☐ **Growing importance** of Eastern Hemisphere oil production to Gulf Oil Corporation's operations and the desire to maintain closer liaison with the producing nations in the area prompted the company to form its new London divisional production office. As top coordinator, Gulf selected veteran executive Charles W. Hamilton. For details, see.....**Page 222**



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1955 Looks Like a Better Year

Oil prospects for 1955 are more favorable than they were a year ago. On the whole, the petroleum industry of the U. S. begins 1955 in a healthier position and with a brighter outlook.

Several disturbing influences made the year 1954 one of adjustment for the U. S. oil industry. Chief among these factors was the smaller-than-normal growth in oil consumption. The demand for petroleum in 1954 barely exceeded that of the previous year, compared with a normal annual gain of approximately 300,000 barrels daily. Factors contributing to 1954's slower pace were a slackening in demand because of a milder than usual winter, a post-Korean decline in military needs, plus a modest slowing down in general business activity.

The outlook for 1955 is made more promising by prospects that demand for petroleum can be expected to resume a more normal rate of growth in this country. General business activity is to expand slightly. Although industrial expansion is tapering off, there is a huge backlog of construction in homes, schools, hospitals, highways and other works. A strong reassurance is that people are continuing to spend in a normal fashion. If a normally cold winter is experienced, and the first few weeks of 1955 have amply fulfilled this requirement, demand for oil should be 3 to 4 percent higher than in 1954. This would mean an increase of 250,000 to 300,000 barrels per day in U. S. consuming rates.

•

An important factor in presaging more favorable conditions for the U. S. oil industry during 1955 is the improved stock position. The year 1954 opened with crude oil output, refinery output, and inventories of refined products considerably in excess of required levels.

Even though demand rose slightly, the abundance of supply forced the industry to reduce its producing and refinery operations to avoid excessive stocks.

However, as the year progressed corrective action reduced crude production and refinery operations sufficiently to permit the working off of excessive inventories, despite the disappointing demand for oil products. U. S. inventories of both crude oil and refined products are lower than a year ago. Crude oil inventories at the beginning of 1955 were 15 million barrels below the first of 1954 level, and 24 million barrels less than six months ago. Motor fuel inventories were particularly troublesome during 1954. Last June they were 22 million barrels higher than the previous year, but at the beginning of 1955 were 1⅓ million less than a year ago. As a result the industry is in a much stronger economic position at the beginning of 1955 than in 1954. Consequently the road ahead will be easier.

In view of the favorable inventory position, prospective growth in demand should result in peak U. S. producing and refining levels during 1955. Increased production and refining will be in direct contrast with the reduction which occurred during 1954. This will encourage producers and refiners to continue to make heavy capital expenditures of all sorts, including the drilling of wells to develop additional crude oil reserves.

•

The over-all outlook is good, promising higher consumption, more production and enlarged refinery operations. However, it is still advisable for the industry to exercise caution. Crude oil producibility and refinery capacity have increased to new all-time peaks, far in excess of current requirements. While this is desirable as a national defense "cushion," both producers and refiners need to hold their operating levels down to consumer requirements. Otherwise, excessive stocks again will plague the industry, and make it necessary to undergo another period of adjustment as in 1954. If production and refinery output are held to proper levels, oil can enjoy good conditions in 1955.

Warren L. Baker

Salient Oil and Gas Statistics of U. S.

Demand for all oils expected to increase 3.0 percent, with domestic use up 4.0 percent and exports down 18.4 percent. Gain of 3.1 percent in crude production forecast. Runs to stills to rise 3.0 percent. Imports to go higher.

ITEM	THOUSANDS OF BARRELS, EXCEPT AS NOTED				
	1953	1954	% Diff. '53-'54	1955 Forecast	% Diff. '54-'55
Total Demand, All Oils	**2,931,567**	**2,957,797**	**+ 0.9**	**3,048,000**	**+ 3.0**
(Daily Average)	8,032	8,103	+ 0.9	8,351	+ 3.0
Gasoline Total Demand	1,244,249	1,271,678	+ 2.2	1,300,000	+ 2.2
(Daily Average)	3,409	3,484	+ 2.2	3,562	+ 2.2
Kerosine, Total Demand	121,732	121,580	— 0.1	125,000	+ 2.8
(Daily Average)	334	333	— 0.1	342	+ 2.8
Residual Fuel Oil, Total Demand	591,141	551,889	— 6.7	558,000	+ 1.1
(Daily Average)	1,620	1,512	— 6.7	1,528	+ 1.1
Distillate Fuel Oil, Total Demand	521,379	549,989	+ 5.5	574,000	+ 4.4
(Daily Average)	1,428	1,507	+ 5.5	1,573	+ 4.4
Domestic Demand, All Oils	**2,784,900**	**2,826,675**	**+ 1.5**	**2,941,000**	**+ 4.0**
(Daily Average)	7,630	7,744	+ 1.5	8,058	+ 4.0
Gasoline Domestic Demand	1,206,329	1,237,278	+ 2.6	1,272,000	+ 2.8
(Daily Average)	3,305	3,390	+ 2.6	3,485	+ 2.8
Kerosine Domestic Demand	114,520	116,364	+ 1.6	121,000	+ 4.0
(Daily Average)	314	319	+ 1.6	331	+ 4.0
Residual Fuel Oil Domestic Demand	564,933	525,178	— 7.0	540,000	+ 2.8
(Daily Average)	1,548	1,439	— 7.0	1,479	+ 2.8
Distillate Fuel Oil Domestic Demand	489,110	524,906	+ 7.3	554,000	+ 5.5
(Daily Average)	1,340	1,438	+ 7.3	1,518	+ 5.5
Exports, Total, Crude Oil and Refined Products	**146,667**	**131,122**	**— 10.6**	**107,000**	**— 18.4**
(Daily Average)	402	359	— 10.6	293	— 18.4
Crude Oil Exports	19,931	13,967	— 29.9	11,000	— 21.3
(Daily Average)	55	38	— 29.9	30	— 21.3
Refined Products Exports	126,736	117,155	— 7.6	96,000	— 18.1
(Daily Average)	347	321	— 7.6	263	— 18.1
Crude Runs to Stills, Total	**2,554,865**	**2,537,893**	**— 0.7**	**2,614,000**	**+ 3.0**
(Daily Average)	7,000	6,953	— 0.7	7,162	+ 3.0
Demand for Crude, Total	**2,591,826**	**2,570,349**	**— 0.8**	**2,644,000**	**+ 2.9**
(Daily Average)	7,101	7,042	— 0.8	7,244	+ 2.9
Demand for Domestic Crude	2,358,108	2,331,870	— 1.1	2,386,000	+ 2.3
(Daily Average)	6,461	6,389	— 1.1	6,537	+ 2.3
Crude Oil Production	**2,359,998**	**2,312,212**	**— 2.0**	**2,386,000**	**+ 3.2**
(Daily Average)	6,466	6,335	— 2.0	6,537	+ 3.2
Value at Wells, $ Thousand	6,324,795	6,381,705	+ 0.9	.....	.....
Average Value, $ Barrel	2.68	2.76	+ 3.0	.....	.....
Natural Gas Liquids Production	**241,890**	**246,500**	**+ 1.9**	**258,500**	**+ 4.9**
(Daily Average)	663	675	+ 1.8	718	+ 4.9
Average Value at Plants, ¢ per Gallon	6.0	5.4	— 10.0	.....	.....
Imports, Total Crude Oil and Refined Products	**383,157**	**387,993**	**+ 1.3**	**411,000**	**+ 5.9**
(Daily Average)	1,050	1,063	+ 1.3	1,126	+ 5.9
Crude Petroleum Imports	236,576	238,606	+ 0.9	258,000	+ 8.1
(Daily Average)	648	654	+ 0.9	707	+ 8.1
Refined Products Imports	146,581	149,387	+ 1.9	153,000	+ 2.4
(Daily Average)	402	409	+ 1.9	419	+ 2.4

S. for 1953 and 1954 and Forecasts for 1955

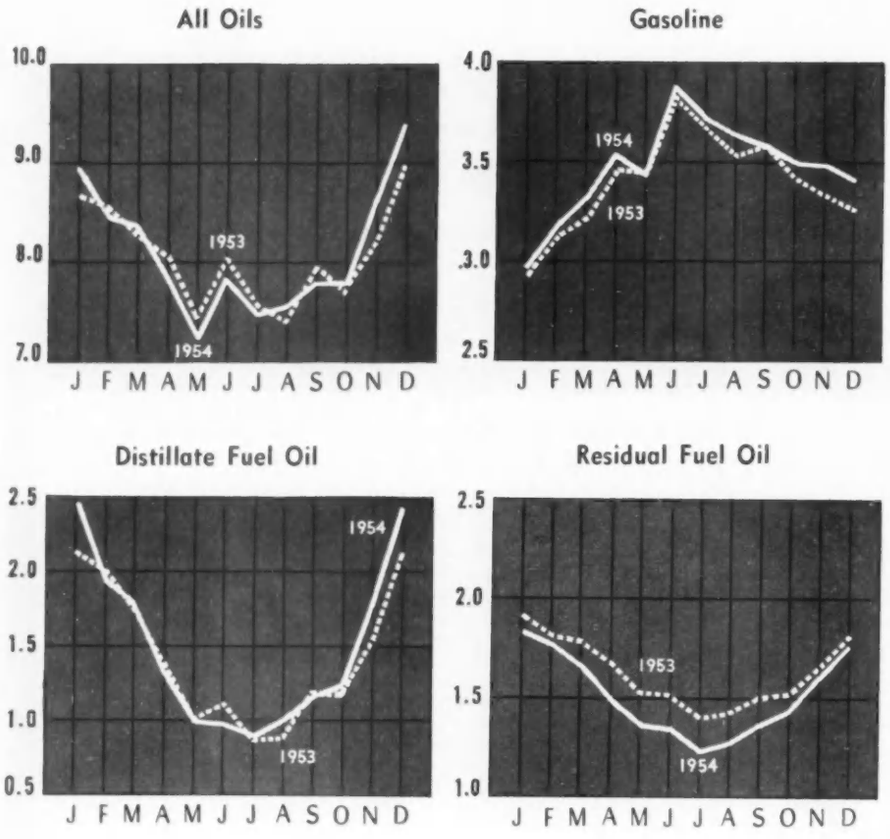
Production of natural gas and natural gas liquids to expand. Reserves of liquid hydrocarbons and natural gas at new highs. Record amount of footage to be drilled, although gain in well completions will be moderate.

ITEM	NUMBER, EXCEPT AS NOTED				
	1953	1954	% Diff. '53-'54	1955 Forecast	% Diff. '54-'55
Nat'l. Gas Marketed Production, Bln, Cu. Ft.	**8,397**	**8,700**	**+ 3.6**	**9,000**	**+ 3.4**
Value at Consumpt'n Points, ¢ per M. Cu. Ft.	35.5	37.0	+ 4.2	38.0	+ 2.7
Value at Wells, ¢ per M. Cu. Ft.	9.2	10.0	+ 8.7	10.5	+ 5.0
Liq. Hydrocarbon Reserves, Yr. End, Miln. Bbls.	**34,383**	**36,125**	**+ 5.1**	.....	.....
Crude Oil Reserves, Year End, Million Bbls.	28,945	30,337	+ 4.8	.....	.....
Nat Gas Liquids Reserves, Yr. End, Miln. Bbls.	5,438	5,788	+ 6.4	.....	.....
Natural Gas Reserves, Yr. End, Billion Cu. Ft.	**211,447**	**221,548**	**+ 4.8**	.....	.....
Stocks End of Year, All Oils, Thousand Barrels	**727,738**	**720,125**	**— 1.0**	**728,125**	**+ 1.1**
Crude Oil Stocks, Thousand Barrels	276,676	260,124	— 6.0	260,124	.....
Natural Gas Liquids Stocks, Thousand Bbls.	10,428	14,500	+ 39.0	14,500	.....
Refined Products Stocks, Thousand Barrels	440,634	445,501	+ 1.1	453,501	+ 1.8
Total Discoveries, New Fields and New Pays	**1,925**	**2,037**	**+ 5.8**	.....	.....
New Fields (Oil, Distillate, Gas)	1,418	1,447	+ 2.0	.....	.....
New Pays (Oil, Distillate, Gas)	507	590	+ 16.4	.....	.....
Oil Discoveries	**1,458**	**1,512**	**+ 3.7**	.....	.....
New Oil Fields	1,062	1,079	+ 1.6	.....	.....
New Oil Pays	396	433	+ 9.3	.....	.....
Distillate Discoveries	**156**	**230**	**+ 47.4**	.....	.....
New Distillate Fields	97	118	+ 21.6	.....	.....
New Distillate Pays	59	112	+ 89.8	.....	.....
Gas Discoveries	**311**	**295**	**— 5.2**	.....	.....
New Gas Fields	259	250	— 3.5	.....	.....
New Gas Pays	52	45	— 13.5	.....	.....
Strict Wildcats Drilled	**10,743**	**10,815**	**+ 0.7**	**10,976**	**+ 1.5**
Productive Wildcats Completed	1,418	1,447	+ 2.0	.....	.....
Non-Productive Wildcats Drilled	9,325	9,368	+ 0.5	.....	.....
Well Completions, Total	**49,966**	**52,396**	**+ 4.9**	.....	.....
New Wells Completed, Total	**49,480**	**51,902**	**+ 4.9**	**52,612**	**+ 1.4**
Oil Wells	25,251	28,141	+ 11.4	.....	.....
Distillate Wells	374	672	+ 79.7	.....	.....
Gas Wells	3,858	3,366	— 12.8	.....	.....
Dry Holes	18,759	18,930	+ 0.9	.....	.....
Input and Disposal Wells	1,238	793	— 36.0	.....	.....
Oil Wells Drilled Deeper	**486**	**494**	**+ 1.6**	.....	.....
Footage Drilled, Total Wells, Thousand Feet	**198,840**	**209,944**	**+ 5.6**	.....	.....
Footage Drilled, New Wells, Thousand Feet	198,432	209,502	+ 5.6	214,625	+ 2.4
Footage Drilled, Old Wells, Thousand Feet	408	442	+ 8.3	.....	.....
Wells Drilling, End of Year	**4,802**	**4,680**	**— 2.5**	.....	.....
Producing Oil Wells, End of Year	**501,859**	**514,808**	**+ 2.6**	.....	.....
On Artificial Lift	442,394	452,652	+ 2.3	.....	.....
Flowing Oil Wells	59,465	62,156	+ 4.5	.....	.....
Producing Gas and Condensate Wells, Yr. End	**69,218**	**70,686**	**+ 2.1**	.....	.....
Gas Wells	64,643	65,286	+ 1.0	.....	.....
Condensate Wells	4,575	5,400	+ 18.0	.....	.....

Total Demand for Oils, by Months, 1953 and 1954

(Including both domestic and export demand supplied by U. S. petroleum industry.)

MILLIONS OF BARRELS DAILY



Supply and Demand . . . Markets

will absorb increased production and refinery runs.

By L. J. LOGAN, World Oil Staff

The U. S. oil industry will meet greater demand for its products in 1955, and expanded markets will absorb more production of crude oil and natural gas liquids as well as the expected larger imports of crude and products.

With benefit of higher demand, the industry will be justified in moderately stepping up crude runs to stills at refineries, and in making limited additions to stocks of refined products. Stocks of crude oil are comparatively low, and although no increase for 1955 is considered essential, limited expansion of crude oil inventories could occur without seriously adverse consequences.

Total demand for all oils to be met by the U. S. oil industry in 1955 will average 8,351,000 barrels daily, the U. S. Bureau of Mines has forecast. This would represent an increase of 248,000 barrels daily or 3.0 percent over 1954. It would contrast with an increase of only 71,000 barrels per day or 0.9 percent for 1954 over 1953.

During the coming year, as in other recent years, total demand for oils will be held down by declining exports. Shipments to other countries in 1955 are forecast at 293,000 barrels daily, down 66,000 barrels daily or 18.4 percent from 1954. This drop would follow that of 43,000 barrels daily or 10.6 percent in 1954 from 1953. The anticipated exports of 1955 include 263,000 barrels a day of refined products and 30,000 daily of crude.

Domestic demand for all oils in 1955 will average 8,058,000 barrels daily. This will constitute 96.5 percent of total demand, while the exports of 293,000 daily will represent only 3.5 percent. The expected domestic consumption would be 314,000 barrels a day or 4.0 percent more than that of 1954. This increase would be considerably better than the small gain of the past year. The domestic demand of 1954 was only 114,000 barrels per day or 1.5 percent above 1953.

Production. Based upon the above estimates of demand for oils, the Bureau of Mines calculated that in 1955 the markets would absorb domestic production of crude oil averaging 6,537,000 barrels daily. That would be an increase of about 194,000 barrels daily or 3.1 percent over the output of 6,343,000 per day in 1954, as estimated by World Oil here for the purposes of this supply and demand forecast. (This is a later and probably more exact figure than that of 6,335,000 daily shown for 1954 crude production elsewhere in this issue.)

The anticipated substantial increase in crude production in 1955 contrasts with a decrease of 110,000 barrels daily or 1.5 percent in 1954 from 1953. That curtailment had been made in efforts to balance supply with the relatively weak demand for 1954.

U. S. production of natural gas liquids in 1955 is expected to average 710,000 barrels daily, an increase of 33,000 daily or 4.8 percent over 1954. This increase would compare with a gain of 13,000 barrels daily or 1.9 percent for 1954 over 1953. While this further rise in production of natural gasoline and liquefied petroleum gas is expected, it may be questioned whether that volume will be fully absorbed by the markets. For in 1954, as in 1953, the markets did not absorb all the supplies offered, and surpluses accumulated in storage. Markets and prices for those light products consequently were affected adversely.

Imports. A material part of the supply now involved in meeting the demand for petroleum products is made up of imports of crude oil and refined products. In 1955 the total

FILL YOUR CASING AUTOMATICALLY

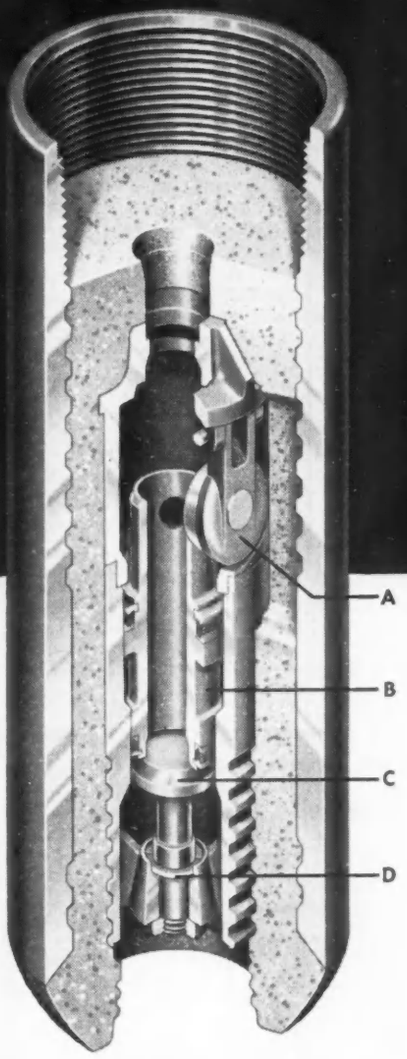
...from the bottom...while it's being run

with BAKER

- **DIFFERENTIAL FILL-UP SHOES** *and*
- **DIFFERENTIAL FILL-UP COLLARS**

Here's what DIFFERENTIAL FILL-UP Equipment does . . .

Permits the casing to *fill automatically from the bottom*, while it is being run, to within 90% of the fluid level of the annulus (using a shoe OR a collar)—or to within 81% of the fluid level of the annulus (using *both* a shoe AND a collar). In addition, a back-pressure valve is present to be used at the *discretion of the operator*, for "floating" or for cementing.



Baker DIFFERENTIAL FILL-UP Shoe, Product No. 1081.

A—Flapper Valve functions only at discretion of operator.
B—Sleeve Valve operates to control rate of flow and volume of "fill-up" fluid.
C—Sleeve Valve Seat.
D—Shear Ring is sheared. Flapper Valve now functions for floating or cementing.

Here's how Baker DIFFERENTIAL FILL-UP Equipment will aid you to avoid danger, increase rig efficiency, save valuable time and promote safety...

REDUCES THE DANGEROUS "RAM EFFECT" thus minimizing the hazard of breaking down a potential lost circulation zone.

SAVES COSTLY DRILLING MUD that might otherwise be lost to the formation due to the "ram effect."

MINIMIZES DAMAGE TO MUD CAKE on the wall of the hole. The majority of the fluid displaced as the casing string is lowered enters the casing instead of flowing up the annulus and causing possible damage to the mud cake.

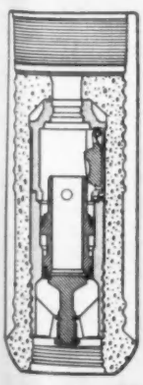
REDUCES DANGER OF STICKING CASING by reducing to a minimum the "no-motion time" formerly required to fill casing at the surface—extremely important when running casing in directional holes or sloughing formations.

SAVES ONE-HALF THE RUNNING-IN TIME plus the proven advantages of Baker Floating Equipment, including a back-pressure valve for cementing.

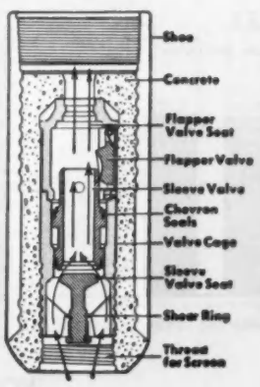
KEEPS THE RIG FLOOR CLEAN AND SAFE by eliminating the messy spill-over and splattering of mud present when casing is filled at the surface.

Ask any Baker representative or office for this new 16-page illustrated brochure . . .

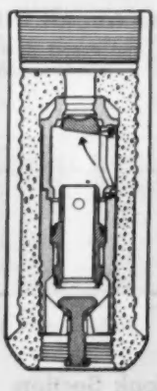
BAKER OIL TOOLS, INC., HOUSTON • LOS ANGELES • NEW YORK



When running-in, the Sleeve Valve is in closed position in contact with the Sleeve Valve Seat. When the Sleeve Valve is in this position, fluid entry into the casing from below the valve is effectively blocked. The Sleeve Valve will be in the closed position whenever the height of the fluid column in the casing (the fill) EXCEEDS 90% of the height of the fluid column in the annulus.



When the height of the fluid column in the casing (the fill) is LESS than 90% of the height of the fluid column in the annulus, the Sleeve Valve moves upward away from the Seat and permits fluid entry into the casing through the bottom of the FILL-UP Shoe. During the casing run, the Sleeve Valve opens and closes according to the pressures imposed on its top and bottom areas and thus automatically regulates the degree of fill.



When it is time for cementing, pressure of approximately 1,000 psi is built up in the casing to shear the Shear Ring that holds the Sleeve Valve Seat in the supporting vanes of the Valve Cage. The Sleeve Valve can then move downward sufficiently to release the spring-loaded Flapper Valve, and thereafter the FILL-UP Shoe functions as a conventional Float Shoe.

imports are estimated at 1,126,000 barrels daily. That would be an increase of 63,000 barrels daily or 5.9 percent over receipts in 1954. Total imports of 1954 were 13,000 barrels daily or 1.3 percent over imports in 1953. That gain contrasted with a decrease in U. S. crude production in 1954.

Refined product imports consist largely of residual fuel oil, and they have been increasing moderately. Product imports of 1955 are estimated at 419,000 barrels daily, compared with about 409,000 daily in 1954 and 402,000 a day in 1953. Expected crude oil imports of 707,000 barrels daily in 1955 would be 53,000 a day or 8.1 percent more than receipts in 1954. The 654,000 barrels per day imported in 1954 was 6,000 a day or 0.9 percent more than shipments received in 1953.

Stocks. The above estimates of production in 1955 are based on the assumption that there will be no net change during the year in stocks of crude oil and that there will be a net increase in refined product stocks amounting to 8 million barrels for the year or averaging 22,000 barrels daily. During 1954 crude oil stocks were drawn down by 16.5 million barrels, or an average of 45,000 barrels daily, while refined product stocks were increased nearly 5 million barrels or 13,000 barrels daily.

The changes in stocks in 1954 represented favorable handling of inventories through ultimately successful adjustment of supplies to lagging demand for petroleum products. In 1953, in contrast, there had been some increase in crude stocks and excessive additions to stocks of refined products, totaling over 46 million barrels, or averaging 128,000 barrels daily.

At the beginning of 1954, therefore, the industry had on hand substantial surpluses of products, particularly gasoline. During 1954, however, the stocks were held down, and demand improved, and the industry was in a better inventory position at the beginning of 1955.

Runs to Stills. To meet the market requirements for petroleum products in 1955, the industry will need to maintain refinery runs averaging 7,162,000 barrels daily, the Bureau of Mines computations indicate. That volume would be 309,000 barrels daily or 3.0 percent above the runs of 6,953,000 barrels per day in 1954, as estimated in part by World Oil. The 1954 runs were 47,000 barrels a day

U. S. Petroleum Supply and Demand

(Source: Data from U. S. Bureau of Mines, except December, 1954, estimated by WORLD OIL.)

THOUSANDS OF BARRELS DAILY

YEAR	SUPPLY: U.S. Prod. All Oils[1]	SUPPLY: Total Imports[2]	SUPPLY: Total New Supply	Change in Stocks All Oils[3]	DEMAND: Domestic Demand[4]	DEMAND: Exports and Shipments[5]	DEMAND: Total Demand
1936	3,128	156	3,284	— 62	2,986	360	3,346
1937	3,637	157	3,804	+126	3,205	473	3,678
1938	3,472	149	3,621	— 25	3,115	531	3,646
1939	3,614	162	3,776	—115	3,373	518	3,891
1940	3,858	229	4,087	+106	3,625	356	3,981
1941	4,073	266	4,339	— 30	4,071	298	4,369
1942	4,034	99	4,133	—160	3,972	321	4,293
1943	4,372	174	4,546	— 33	4,168	411	4,579
1944	4.864	252	5,116	— 17	4,562	571	5,133
1945	5,010	311	5,321	— 37	4,857	501	5,358
1946	5,073	377	5,450	+119	4,912	419	5,331
1947	5,451	437	5,888	— 14	5,451	451	5,902
1948	5,921	514	6,435	+292	5,775	368	6,143
1949	5,477	645	6.122	— 8	5,803	327	6,130
1950	5,906	850	6,756	— 55	6,507	304	6,811
1951	6,720	844	7,564	+ 89	7,053	422	7,475
1952	6,868	952	7,820	+108	7,280	432	7,712
1953	7,130	1,050	8,180	+148	7,630	402	8,032
1954	7,020	1,063	8,083	— 20	7,744	359	8,103
1955 Est	7,247	1,126	8,373	+ 22	8,058	293	8,351

[1] Includes crude oil, natural gasoline, related products, and benzol. [2] Includes both refined and crude oil. [3] Includes changes in both refined and crude oil stocks. Minus signs indicate decreases and plus signs increases. [4] Includes military and civilian demand in continental United States and shipments to U.S. armed forces abroad. [5] Includes shipments to non-contiguous territories.

Demand for All Oils, by Years

Total, domestic, and export demand supplied by U. S. petroleum industry.

(Source: U. S. Bureau of Mines, except Dec., 1954, estimated.)

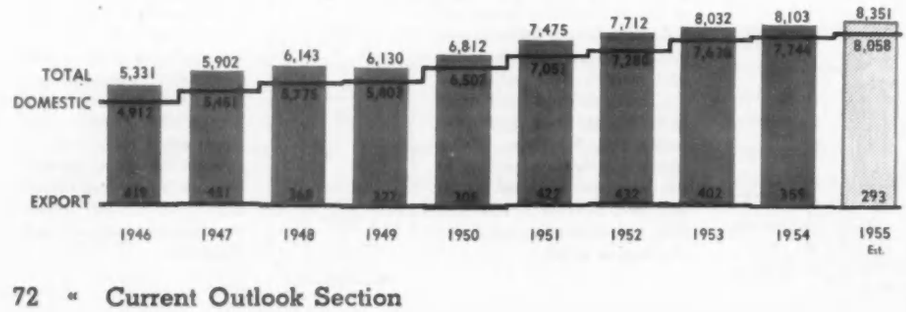
THOUSANDS OF BARRELS

Year	Total Demand: Annual	Total Demand: Daily	Domestic: Total	Domestic: Daily	Exports: Total	Exports: Daily
1918						
1919	438,434	1,201	374,541	1,026	63,893	175
1920	535,382	1,463	456,764	1,245	79,618	217
1921	592,402	1,450	457,521	1,253	71,881	197
1922	605,540	1,659	530,990	1,455	74,550	204
1923	754,361	2,067	652,027	1,786	102,334	280
1924	805,070	2,120	687,742	1,879	117,328	321
1925	840,818	2,304	726,797	1,991	114,021	312
1926	912,893	2,501	780,487	2,138	132,406	363
1927	944,762	2,588	802,499	2,199	142,263	390
1928	1,014,716	2,772	859,759	2,349	154,957	423
1929	1,103,203	3,022	940,083	2,576	163,120	447
1930	1,083,511	2,968	927,016	2,540	156,495	429
1931	1,027,274	2,814	902,920	2,474	124,354	341
1932	938,757	2,565	835,482	2,283	103,275	282
1933	975,214	2,672	868,487	2,379	106,727	292
1934	1,034,672	2,835	920,165	2,521	114,507	314
1935	1,112,672	3,048	983,685	2,695	128,987	353
1936	1,224,748	3,346	1,092,754	2,986	131,994	361
1937	1,342,516	3,678	1,169,682	3,205	172,834	473
1938	1,330,850	3,646	1,137,122	3,115	193,728	531
1939	1,420,035	3,890	1,231,057	3,373	188,959	518
1940	1,457,086	3,981	1,326,620	3,625	130,466	356
1941	1,594,609	4,369	1,485,779	4,071	108,830	298
1942	1,566,815	4,293	1,449,908	3,972	116,907	320
1943	1,671,383	4,579	1,521,426	4,168	149,957	411
1944	1,878,879	5,134	1,671,263	4,566	207,616	567
1945	1,955,668	5,358	1,772,685	4,857	182,983	501
1946	1,945,909	5,331	1,792,786	4,912	153,123	419
1947	2,154,280	5,902	1,989,803	5,451	164,477	451
1948	2,218,352	6,143	2,113,678	5,775	134,674	368
1949	2,237,626	6,130	2,118,250	5,803	119,376	327
1950	2,486,363	6,812	2,375,057	6,507	111,306	305
1951	2,728,465	7,475	2,574,413	7,053	154,052	422
1952	2,822,595	7,712	2,664,407	7,280	158,188	432
1953	2,931,567	8,032	2,784,900	7,630	146,667	402
1954	2,957,797	8,103	2,826,675	7,744	131,122	359
1955 Est.	3,048,000	8,351	2,941,000	8,058	107,000	293

Demand for All Oils, by Years, 1946-1955

Total, domestic, and export demand supplied by U. S. petroleum industry

(THOUSANDS OF BARRELS DAILY)



or 0.7 percent less than those of 7,000,000 daily in 1953.

Gasoline. Expected total demand for 3,562,000 barrels daily of gasoline in 1955 would be 78,000 barrels or 2.2 percent above 1954. This gain would be nearly the same as that of 75,000 barrels or 2.2 percent in 1954 over 1953. Exports are forecast at 28,000 barrels daily in 1955, compared with 34,400 in 1954 and 37,920 in 1953. Domestic consumption is estimated at 3,485,000 barrels daily, an increase of 95,000 barrels or 2.8 percent over 1954, or nearly the same gain as that of 85,000 barrels or 2.6 percent for 1954 over 1953.

Kerosine. Total demand for kerosine is expected to average 342,000 barrels daily in 1955, compared with 333,000 daily in 1954 and 334,000 a day in 1953. The forecast indicates an increase of 2.8 percent. Exports of 11,000 barrels daily would compare with 14,000 in 1954 and 20,000 in 1953. Anticipated domestic use of

Forecast of Petroleum Demand and Supply in 1955, Compared with 1954 and 1953

All data from U. S. Bureau of Mines except December, 1954, estimated with aid of American Petroleum Institute reports.

THOUSANDS OF BARRELS

ITEM	ANNUAL COMPARISONS 1953	1954	% Diff. '53-'54	1955 Forecast	% Diff. '54-'55	1955 FORECAST BY QUARTERS 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
DEMAND									
All Oils, Total Demand	**2,931,567**	**2,957,797**	**+ 0.9**	**3,048,000**	**+ 3.0**	**804,000**	**712,000**	**721,000**	**811,000**
(Daily Average)	8,032	8,103	+ 0.9	**8,351**	+ 3.0	8,933	7,824	7,837	8,815
Domestic Demand	2,784,900	2,826,675	+ 1.5	**2,941,000**	+ 4.0	777,000	682,000	695,000	787,000
(Daily Average)	7,630	7,744	+ 1.5	**8,058**	+ 4.0	8,633	7,494	7,554	8,554
Exports, Total	146,667	131,122	— 10.6	**107,000**	— 18.4	27,000	30,000	26,000	24,000
(Daily Average)	402	359	— 10.6	**293**	— 18.4	300	330	283	261
Crude Exports	19,931	13,967	— 29.9	**11,000**	— 21.3	3,000	3,000	2,500	2,500
(Daily Average)	55	38	— 29.9	**30**	— 21.3	33	33	27	27
Refined Exports	126,736	117,155	— 7.6	**96,000**	— 18.1	24,000	27,000	23,500	21,500
(Daily Average)	347	321	— 7.6	**263**	— 18.1	267	297	255	234
Gasoline, Total Demand	**1,244,249**	**1,271,678**	**+ 2.2**	**1,300,000**	**+ 2.2**	**291,000**	**340,000**	**347,000**	**322,000**
(Daily Average)	3,409	3,484	+ 2.2	**3,562**	+ 2.2	3,233	3,736	3,772	3,500
Domestic Demand	1,206,329	1,237,278	+ 2.6	**1,272,000**	+ 2.8	284,000	332,000	340,000	316,000
(Daily Average)	3,305	3,390	+ 2.6	**3,485**	+ 2.8	3,156	3,648	3,696	3,438
Exports	37,920	34,400	— 9.3	**28,000**	— 18.6	7,000	8,000	7,000	6,000
(Daily Average)	104	94	— 9.3	**77**	— 18.6	78	88	76	65
Kerosine, Total Demand	**121,732**	**121,580**	**— 0.1**	**125,000**	**+ 2.8**	**46,000**	**18,000**	**19,000**	**42,000**
(Daily Average)	334	333	— 0.1	**342**	+ 2.8	511	198	207	457
Domestic Demand	114,520	116,364	+ 1.6	**121,000**	+ 4.0	45,000	17,000	18,000	41,000
(Daily Average)	314	319	+ 1.6	**331**	+ 4.0	500	187	196	446
Exports	7,212	5,216	— 27.7	**4,000**	— 23.3	1,000	1,000	1,000	1,000
(Daily Average)	20	14	— 27.7	**11**	— 23.3	11	11	11	11
Distillate Fuel Oil, Total Demand	**521,379**	**549,989**	**+ 5.5**	**574,000**	**+ 4.4**	**201,000**	**105,000**	**97,000**	**171,000**
(Daily Average)	1,428	1,507	+ 5.5	**1,573**	+ 4.4	2,233	1,154	1,054	1,858
Domestic Demand	489,110	524,906	+ 7.3	**554,000**	+ 5.5	196,000	99,000	92,000	167,000
(Daily Average)	1,340	1,438	+ 7.3	**1,518**	+ 5.5	2,178	1,088	1,000	1,815
Exports	32,269	25,083	— 22.3	**20,000**	— 20.3	5,000	6,000	5,000	4,000
(Daily Average)	88	69	— 22.3	**55**	— 20.3	55	66	54	43
Residual Fuel Oil, Total Demand	**591,141**	**551,889**	**— 6.7**	**558,000**	**+ 1.1**	**158,000**	**128,000**	**121,000**	**151,000**
(Daily Average)	1,620	1,512	— 6.7	**1,528**	+ 1.1	1,755	1,407	1,315	1,641
Domestic Demand	564,933	525,178	— 7.0	**540,000**	+ 2.8	153,000	123,000	117,000	147,000
(Daily Average)	1,548	1,439	— 7.0	**1,479**	+ 2.8	1,700	1,352	1,272	1,598
Exports	26,208	26,711	+ 1.9	**18,000**	— 32.6	5,000	5,000	4,000	4,000
(Daily Average)	72	73	+ 1.9	**49**	— 32.6	55	55	43	43
***All Other Oils, Total Demand**	**453,066**	**462,661**	**+ 2.1**	**491,000**	**+ 6.1**	**108,000**	**121,000**	**137,000**	**125,000**
(Daily Average)	1,241	1,267	+ 2.1	**1,345**	+ 6.1	1,200	1,330	1,489	1,359
Domestic Demand	410,008	422,949	+ 3.2	**454,000**	+ 7.3	99,000	111,000	128,000	116,000
(Daily Average)	1,123	1,159	+ 3.2	**1,244**	+ 7.3	1,100	1,220	1,391	1,261
Exports	43,058	39,712	— 7.8	**37,000**	— 6.8	9,000	10,000	9,000	9,000
(Daily Average)	118	109	— 7.8	**101**	— 6.8	100	110	98	98
CHANGE IN STOCKS									
All Oils	**+53,984**	**—7,613**	.....	**+8,000**	.....	**—41,000**	**+35,000**	**+43,000**	**—29,000**
(Daily Average)	+148	—21	.....	**+22**	.....	—455	385	467	—315
Crude Oil	+4,748	—16,552	.....	.....	.....	.....	.....	.....	.....
(Daily Average)	+13	—45	.....	.....	.....	.....	.....	.....	.....
Natural Gasoline	+2,621	+4,072	+ 55.4	.....	.....	.....	.....	.....	.....
(Daily Average)	+7	+11	+ 55.4	.....	.....	.....	.....	.....	.....
Refined Products	+46,615	+4,867	— 89.6	**+8,000**	.....	41,000	+35,000	+43,000	—29,000
(Daily Average)	+128	+13	— 89.6	**+2,192**	.....	—456	+385	+467	—315
NEW SUPPLY									
Total New Supply	**2,985,551**	**2,950,184**	**— 1.2**	**3,056,000**	**+ 3.6**	**763,000**	**747,000**	**764,000**	**782,000**
(Daily Average)	8,180	8,083	— 1.2	**8,373**	+ 3.6	8,478	8,209	8,304	8,500
Domestic Production, Total	**2,602,394**	**2,562,191**	**— 1.5**	**2,645,000**	**+ 3.2**	**654,000**	**650,000**	**668,000**	**673,000**
(Daily Average)	7,130	7,020	— 1.5	**7,247**	+ 3.2	7,267	7,143	7,261	7,315
Crude Oil	2,359,998	†2,315,191	— 1.9	**2,386,000**	+ 3.1	590,000	588,000	603,000	605,000
(Daily Average)	6,466	6,343	— 1.9	**6,537**	+ 3.1	6,556	6,462	6,554	6,576
Other Oils	242,396	247,000	+ 1.9	**259,000**	+ 4.8	64,000	62,000	65,000	68,000
(Daily Average)	664	677	+ 1.9	**710**	+ 4.8	711	681	707	739
Imports, Total	**383,157**	**387,993**	**+ 1.3**	**411,000**	**+ 5.9**	**109,000**	**97,000**	**96,000**	**109,000**
(Daily Average)	1,050	1,063	+ 1.3	**1,126**	+ 5.9	1,211	1,066	1,043	1,185
Crude Oil	236,576	238,606	+ 0.9	**258,000**	+ 8.1	65,000	63,000	64,000	66,000
(Daily Average)	648	654	+ 0.9	**707**	+ 8.1	722	692	695	718
Refined Products	146,581	149,387	+ 1.9	**153,000**	+ 2.4	44,000	34,000	32,000	43,000
(Daily Average)	402	409	+ 1.9	**419**	+ 2.4	489	374	348	467
Crude Oil Runs to Stills, Total	**2,554,865**	**2,537,893**	**— 0.7**	**2,614,000**	**+ 3.0**	**647,000**	**643,000**	**660,000**	**664,000**
(Daily Average)	7,000	6,953	— 0.7	**7,162**	+ 3.0	7,190	7,070	7,175	7,211
Demand for Crude Oil, Total	**2,591,826**	**2,570,349**	**— 0.8**	**2,644,000**	**+ 2.9**	**655,000**	**651,000**	**667,000**	**671,000**
(Daily Average)	7,101	7,042	— 0.8	**7,244**	+ 2.9	7,278	7,154	7,249	7,294
Domestic Crude Demand	2,358,108	2,331,870	— 1.1	**2,386,000**	+ 2.3	590,000	588,000	603,000	605,000
(Daily Average)	6,461	6,389	— 1.1	**6,537**	+ 2.3	6,556	6,462	6,554	6,576
Foreign Crude Demand	233,718	238,479	+ 2.0	**258,000**	+ 8.2	65,000	63,000	64,000	66,000
(Daily Average)	640	653	+ 2.0	**707**	+ 8.2	722	692	695	718

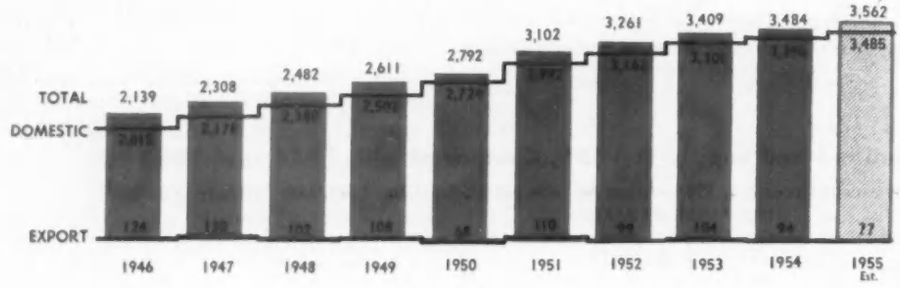
* Includes crude oil used as fuel and lost in handling, liquefied gases, petroleum coke, asphalt, road oil, etc., and refinery losses.
† Later figure than used elsewhere in the issue.

Demand for Principal Products, by Years, 1946-1955

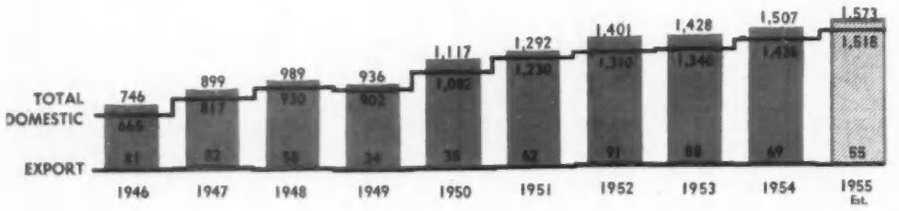
(Total, domestic, and export demand supplied by U. S. petroleum industry)

THOUSANDS OF BARRELS DAILY

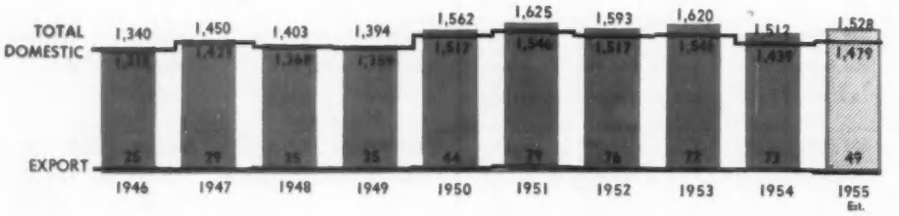
Gasoline



Distillate Fuel Oil



Residual Fuel Oil



Demand for Distillate Fuel, by Years

Total, domestic, and export demand supplied by U. S. petroleum industry.

(Source: U. S. Bureau of Mines, except Dec., 1954, estimated.)

THOUSANDS OF BARRELS

	Total Demand		Domestic		Exports	
Year	Annual	Daily	Total	Daily	Total	Daily
1932	73,883	202	65,101	178	8,782	24
1933	76,172	209	64,748	177	11,424	31
1934	89,330	245	74,824	205	14,506	40
1935	102,277	280	86,028	236	16,249	44
1936	123,205	337	102,757	281	20,448	56
1937	146,970	403	116,841	320	30,129	82
1938	147,090	403	117,449	322	29,641	81
1939	166,993	457	134,973	370	32,020	88
1940	179,991	492	160,851	439	19,140	52
1941	189,749	520	172,824	473	16,925	46
1942	207,236	568	185,661	509	21,575	59
1943	233,067	639	208,110	570	24,957	68
1944	252,811	691	209,320	572	43,491	119
1945	259,580	711	226,084	619	33,496	92
1946	272,381	746	242,894	665	29,487	81
1947	328,150	899	298,273	817	29,877	82
1948	361,869	989	340,576	930	21,293	58
1949	341,573	936	329,278	902	12,295	34
1950	407,538	1,117	394,885	1,082	12,653	35
1951	471,657	1,292	449,102	1,230	22,555	62
1952	512,862	1,405	479,347	1,310	33,515	92
1953	521,379	1,428	489,110	1,340	32,269	88
1954	549,989	1,507	524,906	1,438	25,083	69
1955 Est.	574,000	1,573	554,000	1,518	20,000	55

Demand for Residual Fuel Oil, by Years

Total, domestic, and export demand supplied by U. S. petroleum industry.

(Source: U. S. Bureau of Mines, except Dec., 1954, estimated.)

THOUSANDS OF BARRELS

	Total Demand		Domestic		Exports	
Year	Annual	Daily	Total	Daily	Total	Daily
1932	250,268	684	239,056	653	11,212	31
1933	268,096	734	258,957	709	9,139	25
1934	279,646	766	265,547	727	14,099	39
1935	293,394	804	280,695	769	12,699	35
1936	322,319	881	307,884	841	14,435	39
1937	340,818	934	325,514	892	15,304	42
1938	309,753	849	291,833	799	17,920	49
1939	340,973	934	323,488	886	17,485	48
1940	356,272	973	340,163	929	16,109	44
1941	397,536	1,089	383,422	1,050	14,114	39
1942	417,792	1,145	405,697	1,111	12,095	33
1943	481,902	1,320	467,008	1,279	14,894	41
1944	524,556	1,433	512,020	1,399	12,536	34
1935	535,092	1,466	523,423	1,434	11,669	32
1946	489,217	1,340	480,029	1,315	9,188	25
1947	529,133	1,450	518,510	1,421	10,623	29
1948	513,554	1,403	500,543	1,368	13,011	35
1949	508,662	1,394	496,021	1,359	12,641	35
1950	570,021	1,562	553,793	1,517	16,228	44
1951	593,320	1,625	564,321	1,546	28,999	79
1952	582,866	1,593	555,165	1,517	27,701	76
1953	591,141	1,620	564,933	1,548	26,208	72
1954	551,889	1,512	525,178	1,439	26,711	73
1955 Est.	558,000	1,528	540,000	1,479	18,000	49

331,000 barrels daily would be up 4.0 percent and compare with 319,000 in 1954 and 314,000 in 1953.

Distillate. Anticipated total demand for 1,573,000 barrels daily of distillate fuel oil represents an increase of 66,000 barrels daily or 4.4 percent over 1954, which in turn had shown a gain of 79,000 barrels per day or 5.5 percent over 1953. Exports of 20,000 barrels daily would be a further decrease from the 25,083 daily of 1954 and 32,269 of 1953. Domestic use of 1,518,000 barrels daily in 1955 would be up 80,000 daily or 5.5 percent over 1954, which showed a gain of 98,000 daily or 7.3 percent over 1953.

Residual. Estimated total demand of 1,528,000 barrels daily for residual fuel oil would be 16,000 daily or 1.1 percent above 1954. But the 1954 demand was down 108,000 barrels per day or 6.7 percent from 1953. Exports of 18,000 daily would compare with around 26,000 in 1954 and 1953. Domestic demand of 1,479,000 barrels daily would be up 40,000 barrels or 2.8 percent over 1954, whereas 1954 showed a decrease of 109,000 barrels or 7.0 percent from 1953.

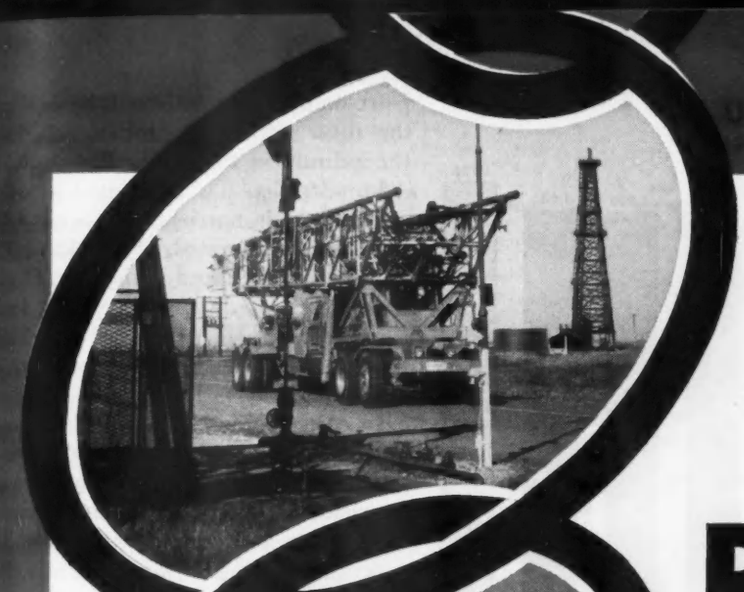
Demand for Gasoline, by Years

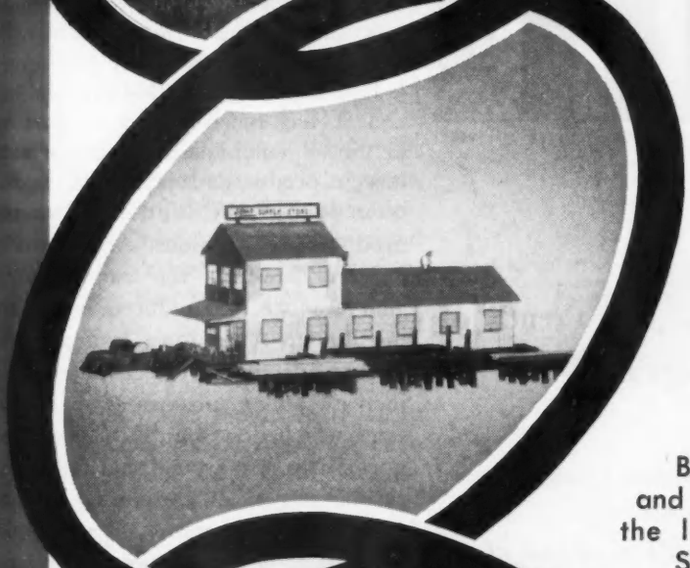
Total, domestic, and export demand supplied by U. S. petroleum industry.

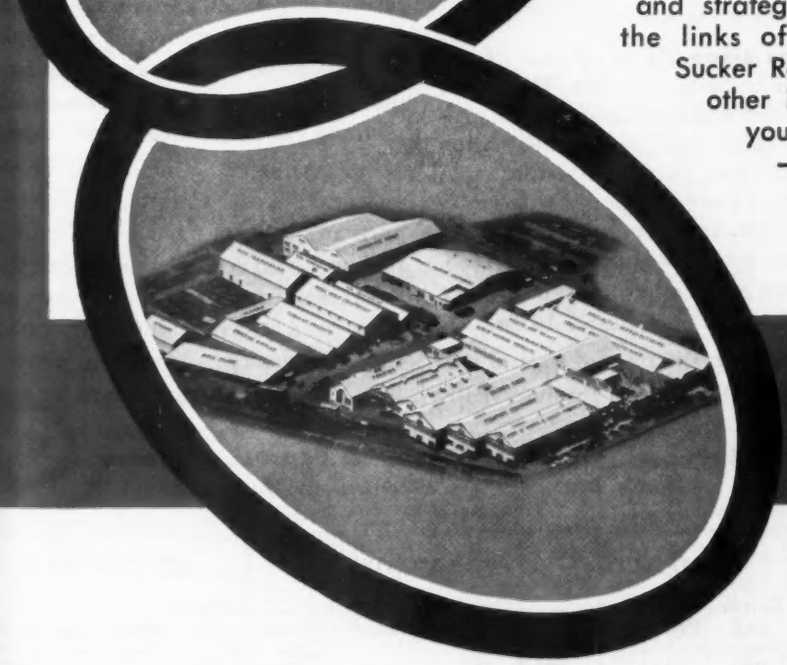
(Source: U. S. Bureau of Mines, except Dec., 1954, estimated.)

THOUSANDS OF BARRELS

	Total Demand		Domestic		Exports	
Year	Annual	Daily	Total	Daily	Total	Daily
1918	93,599	256	79,949	219	13,650	37
1919	97,790	268	88,648	243	9,142	25
1920	124,623	340	108,945	298	15,678	43
1921	130,203	357	116,840	320	13,363	37
1922	152,132	417	137,770	377	14,362	39
1923	195,556	536	174,462	478	21,094	58
1924	225,737	617	196,586	537	29,151	80
1925	264,429	724	232,745	638	31,684	87
1926	311,897	854	268,128	735	43,769	120
1927	350,318	960	305,367	837	44,951	123
1928	392,293	1,072	388,881	926	53,412	146
1929	444,937	1,219	328,878	1,049	62,059	170
1930	463,184	1,269	397,609	1,089	65,575	180
1931	453,559	1,243	407,843	1,117	45,716	125
1932	413,229	1,129	377,791	1,032	35,438	97
1933	409,815	1,123	380,494	1,042	29,321	80
1934	435,025	1,192	410,339	1,124	24,686	68
1935	465,423	1,275	434,810	1,191	30,613	84
1936	510,252	1,394	481,606	1,316	28,646	78
1937	557,658	1,528	519,352	1,423	38,306	105
1938	573,112	1,570	523,003	1,433	50,109	137
1939	600,147	1,644	555,509	1,522	44,638	122
1940	614,867	1,680	589,490	1,611	25,377	69
1941	694,588	1,903	667,505	1,829	27,083	74
1942	624,207	1,710	589,110	1,614	35,097	96
1943	619,815	1,698	568,238	1,557	51,577	141
1944	733,019	2,003	632,482	1,728	100.537	275
1945	784,392	2,149	696,333	1,908	88,059	241
1946	780,751	2,139	735,417	2,015	45,334	124
1947	842,464	2,308	795,015	2,178	47,449	130
1948	908,572	2,482	871,270	2,380	37,302	102
1949	953,060	2,611	913,713	2,503	39,347	108
1950	1,019,011	2,792	994,290	2,724	24,721	68
1951	1,132,087	3,102	1,091,951	2,992	40,136	110
1952	1,193,565	3,261	1,157,280	3,162	36,285	99
1953	1,244,249	3,409	1,206,329	3,305	37,920	104
1954	1,271,678	3,484	1,237,278	3,390	34,400	94
1955 Est.	1,300,000	3,562	1,272,000	3,485	28,000	77







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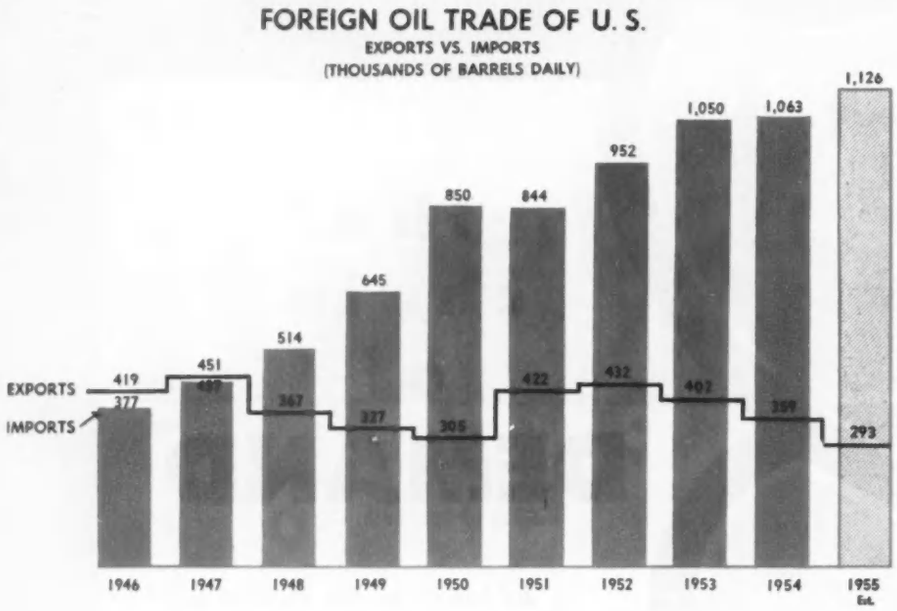


Exports and Imports . . . Trends of rising imports and declining exports to continue.

By ROBERT E. SPANN, World Oil Staff

The U. S. will have the most unfavorable balance of foreign petroleum trade in its history in 1955. Based on estimates of the U. S. Bureau of Mines, the nation will have a net petroleum import balance averaging 833,000 barrels daily, an increase of 129,000 barrels over the net imports of 704,000 barrels per day in 1954.

This estimated net import position for 1955 is based on the Bureau's forecast of petroleum imports of 1,126,000 barrels daily and exports of 293,000 barrels per day. Compared with 1954, total imports are expected to increase by 5.9 percent, and exports will decline by an estimated 18.4 percent.

Crude oil imports, which are expected to constitute nearly 63 percent of the total imports in 1955, are placed at 707,000 barrels daily, an increase of 53,000 barrels daily, or 8.1 percent, over 1954. By comparison, the Bureau estimates that U. S. domestic crude oil production this year will expand only 3.2 percent over 1954. The anticipated level of crude oil imports this year would be higher than the total petroleum imports into the U. S. for any year prior to 1950.

Imports Issue. The volume of petroleum imports into the U. S. has been a debated issue among U. S. producers since 1947, when the nation became a net petroleum importer, a trend that has continued with a growing margin in each successive year. Prior to this postwar period, the U. S. had been a net importer in only three previous years in the early 1920s.

Along with the issue of federal regulation of natural gas producers, the petroleum import issue will be one of the most important problems facing the industry in 1955. The Eisenhower Administration has advocated a lowering of trade barriers, and with Administration approval, two similar bills have been introduced in the 84th Congress which would liberalize U. S. foreign trade policies. The first bill, H.R. 1, introduced by Representative Jere Cooper (D.-Tennessee), chairman of the House Ways and Means Committee, would follow the President's request and permit a three-year extension of the Reciprocal Trade Agreements Act beyond its June 30 expiration date, and would permit the President to lower tariffs.

Hearings have been held on the bill and it has received the support of U. S. oil companies with important foreign production operations. It has been opposed by leading domestic producer organizations. Arguments in favor of lowering the trade barriers generally are that reduced tariffs are essential to American leadership in world trade and that freer trade would increase dollar earnings of many nations which now buy U. S. produced goods. It is also argued that the U. S., as the largest oil-consuming nation, needs foreign-produced oil to supplement its domestic reserves, which have not expanded at nearly the same rate as those elsewhere in the free world.

Opponents of a high level of petroleum imports state that some imports are justified, particularly residual fuel oil, on an economic basis; but that the rate of imports in recent years has been at a level to supplant, rather than supplement, domestic production. This position is backed by state

Excess of U. S. Oil Imports Over Exports, by Years

(Source: Bureau of Mines, except Dec., 1954, estimated.)

(Thousands of Barrels Per Day)

Year	IMPORTS			EXPORTS			NET IMPORTS		
	Crude Oil	Products	Total	Crude Oil	Products	Total	Crude Oil	Products	Total
1946..	236	141	**377**	116	303	**419**	120	162*	**42***
1947..	267	169	**437**	127	325	**451**	140	155*	**14***
1948..	353	161	**514**	108	259	**367**	245	98*	**147**
1949..	421	224	**645**	91	236	**327**	330	12*	**318**
1950..	487	363	**850**	95	210	**305**	392	153	**545**
1951..	491	354	**844**	78	344	**422**	413	10	**422**
1952..	573	379	**952**	73	359	**432**	500	20	**520**
1953..	648	402	**1,050**	55	347	**402**	593	55	**648**
1954..	654	409	**1,063**	38	321	**359**	616	88	**704**
1955†.	707	419	**1,126**	30	263	**293**	677	156	**833**

* Net Exports. † Estimate.

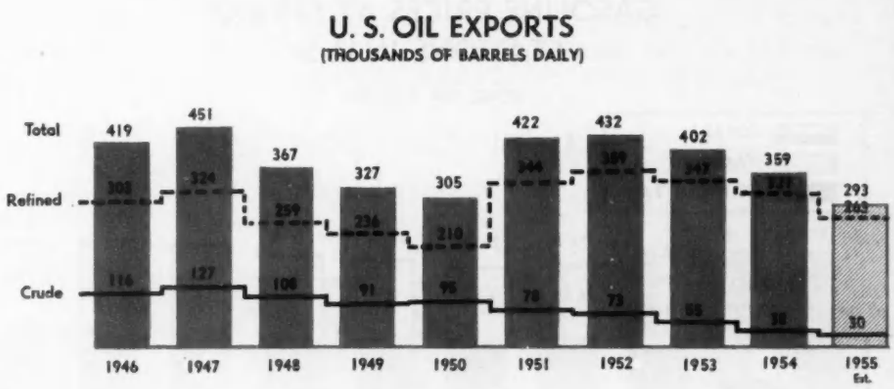
petroleum regulatory bodies in leading producing states, particularly Texas.

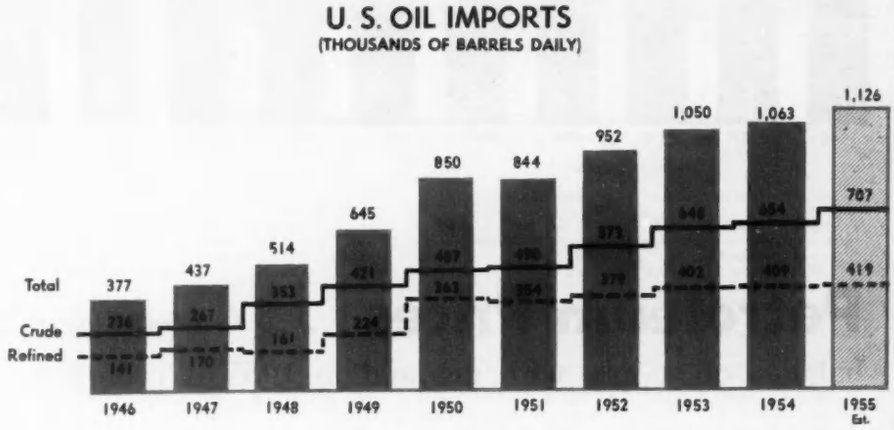
Generally, the opponents to large petroleum imports favor a quota on total imports, limiting the total volume imported to a fixed percentage of U. S. refinery runs or a percentage of total U. S. oil supply. One proposal, made by the Independent Petroleum Association of America last year, would permit imports from Western Hemisphere nations at present tariff rates (10.5 cents a barrel for 25 gravity crude and above; 5.25 cents a barrel for below 25 gravity) but would impose higher tariffs on oil imported from other areas—particularly the Middle East.

Factors Involved. The present net import balance of the U. S. in petroleum trade results from a combination of factors. Chiefly these are the rapid build-up of crude oil production in the Middle East in the postwar years, where U. S. oil companies control about 54 percent of the estimated reserves of more than 92 billion barrels, the discovery and expansion of oil in Western Canada, and the fast growth of refinery capacity in many consuming nations in the free world.

Development of Middle East oil in the postwar years has captured European markets once supplied to a large extent by Venezuelan crude oil, which in turn is seeking additional markets in the Western Hemisphere. Development of refinery capacity, particularly in Europe, is rapidly squeezing out U. S. refined products in world trade.

In addition to European and Asian markets, Middle East oil, due to its volume and lower production costs, coupled with favorable tanker rates in the past two years, can be delivered to the U. S. East Coast for about $2.89 a barrel (36 gravity crude including tariff and based on 1954 average foreign flag tanker rates). This compares with a delivery price for similar crude from the Caribbean area to the U. S. East Coast of $3.23 a barrel, and a delivered price of $3.25 a barrel for West Texas 36 gravity crude via pipe line and tanker to the East Coast. This 1954 delivered price of Middle East crude was 6 cents a barrel cheaper than in 1953, while Caribbean and West Texas crude each declined only 1 cent a barrel in delivered cost.





U. S. Exports and Imports of Crude Oil and Refined Products, by Years

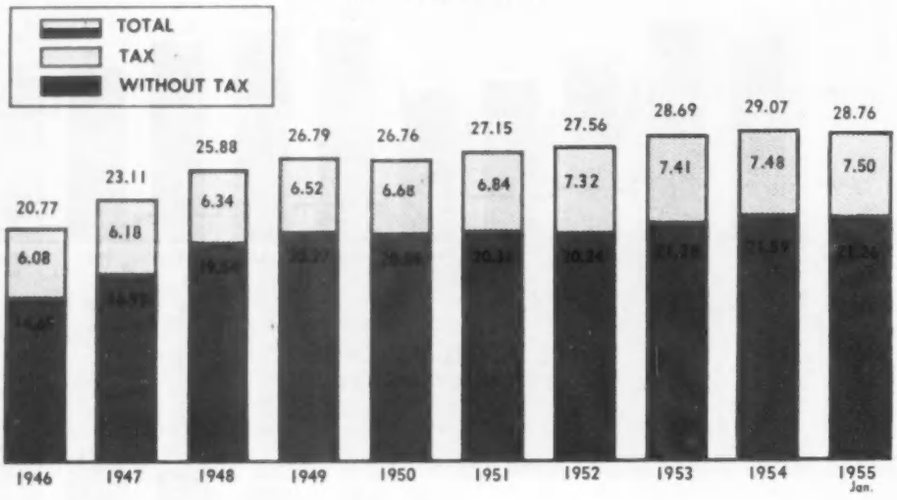
(Source: Bureau of Mines, except Dec., 1954, estimated.)

THOUSANDS OF BARRELS

	EXPORTS							IMPORTS						
	Crude		Refined		All Oils			Crude		Refined		All Oils		
YEAR	Total	Daily	Total	Daily	Total	Daily	YEAR	Total	Daily	Total	Daily	Total	Daily
1918....	5,884	16	62,234	170	68,118	187	1918....	37,736	103	1,227	3	38,963	106
1919....	6,348	17	57,545	158	63,893	175	1919....	52,822	145	1,376	4	54,198	148
1920....	9,295	25	70,323	192	79,618	217	1920....	106,175	290	2,647	7	108,822	297
1921....	9,527	26	62,254	171	71,881	197	1921....	125,364	343	3,428	9	128,792	353
1922....	10,805	30	63,745	175	74,550	204	1922....	130,255	357	5,719	16	135,974	373
1923....	17,534	48	84,800	232	102,334	280	1923....	82,015	225	17,638	48	99,653	273
1924....	18,239	50	99,089	271	117,328	321	1924....	77,775	212	16,806	46	94,581	258
1925....	13,337	36	100,684	276	114,021	312	1925....	61,824	169	16,376	45	78,200	214
1926....	15,407	42	116,999	321	132,406	363	1926....	60,382	165	20,938	57	81,320	223
1927....	15,844	43	126,419	346	142,263	390	1927....	58,383	160	13,353	37	71,736	197
1928....	18,966	52	135,991	372	154,957	423	1928....	79,767	218	11,790	32	91,557	250
1929....	26,401	72	136,719	375	163,120	447	1929....	78,933	216	29,777	82	108,710	298
1930....	23,705	65	132,790	364	156,495	429	1930....	62,129	170	43,489	119	105,618	289
1931....	25,535	70	98,819	271	124,354	341	1931....	47,250	129	38,837	106	86,087	236
1932....	27,393	75	75,882	207	103,275	282	1932....	44,682	122	29,812	81	74,494	203
1933....	36,584	100	70,143	192	106,727	292	1933....	31,893	87	13,501	37	45,394	124
1934....	41,127	113	73,380	201	114,507	314	1934....	35,558	97	14,936	41	50,494	138
1935....	51,430	141	77,557	212	128,987	353	1935....	32,239	88	20,396	56	52,635	144
1936....	50,313	137	81,681	223	131,994	361	1936....	32,327	88	24,777	68	57,104	156
1937....	67,234	184	105,600	289	172,834	473	1937....	27,484	75	29,673	81	57,157	157
1938....	77,254	212	116,474	319	193,728	531	1938....	26,412	72	27,896	76	54,308	149
1939....	72,076	197	116,883	320	188,959	518	1939....	33,095	91	25,965	71	59,060	162
1940....	51,496	141	78,970	216	130,466	356	1940....	42,662	117	41,089	112	83,751	229
1941....	33,238	91	75,592	207	108,830	298	1941....	50,606	139	46,536	127	97,142	266
1942....	33,834	93	83,073	228	116,907	320	1942....	12,297	34	23,669	65	35,966	99
1943....	41,342	113	108,615	298	149,957	411	1943....	13,833	38	49,579	136	63,412	174
1944....	34,238	93	173,378	474	207,616	567	1944....	44,805	122	47,506	130	92,311	252
1945....	32,998	90	149,985	411	182,983	501	1945....	74,337	204	39,282	108	113,619	311
1946....	42,436	116	110,687	303	153,123	419	1946....	86,066	236	51,610	141	137,676	377
1947....	46,355	127	118,122	324	164,477	451	1947....	97,532	267	61,857	169	159,389	437
1948....	39,736	108	94,938	259	134,674	367	1948....	129,093	353	59,051	161	188,144	514
1949....	33,069	91	86,307	236	119,376	327	1949....	153,686	421	81,873	224	235,559	645
1950....	34,823	95	76,483	210	111,306	305	1950....	177,714	487	132,547	363	310,261	850
1951....	28,604	78	125,448	344	154,052	422	1951....	179,073	491	129,121	354	308,194	844
1952....	26,696	73	131,492	359	158,188	432	1952....	209,591	573	138,916	379	348,507	952
1953....	19,931	55	126,736	347	146,667	402	1953....	236,576	648	146,581	402	383,157	1,050
1954....	13,967	38	117,155	321	131,122	359	1954....	238,606	654	149,387	409	387,993	1,063
1955 Est.	11,000	30	96,000	263	107,000	293	1955 Est.	258,000	707	153,000	419	411,000	1,126

GASOLINE PRICES AT SERVICE STATIONS IN U. S.

(CENTS PER GALLON)



Index of Wholesale Prices

(All Commodities vs. Crude Petroleum and Petroleum Products.)

Source: U. S. Bureau of Labor Statistics. 1947-1949 = 100

YEAR	All Commodities	Crude Oil & Products	YEAR	All Commodities	Crude Oil & Products
1926	65.0	98.1	1941	56.8	56.0
1927	62.0	71.3	1942	64.2	58.7
1928	62.9	70.6	1943	67.0	61.4
1929	61.9	69.9	1944	67.6	62.7
1930	56.1	60.4	1945	68.8	62.4
1931	47.4	38.7	1946	78.7	66.3
1932	42.1	44.5	1947	96.4	88.2
1933	42.8	40.2	1948	104.4	111.7
1934	48.7	49.5	1949	99.2	100.1
1935	52.0	53.3	1950	103.1	103.7
1936	52.5	56.2	1951	114.8	110.5
1937	56.1	59.3	1952	111.6	109.3
1938	51.1	54.9	1953	110.1	112.7
1939	50.1	51.3	1954 Est.	110.4	111.0
1940	51.1	49.1	1955 Jan.	109.4	109.4

Petroleum Prices . . . Outlook good as balance of supply with demand in 1955 is promised.

THE PRICE OUTLOOK for crude oil and refined petroleum products at the start of 1955 is the best it has been in several years. In spite of a disappointing demand trend for 1954 as a whole, a sharp upturn in consumer requirements at the close of the year brought a favorable balance between new supply and demand with a resultant reduction in the industry's overstocked position.

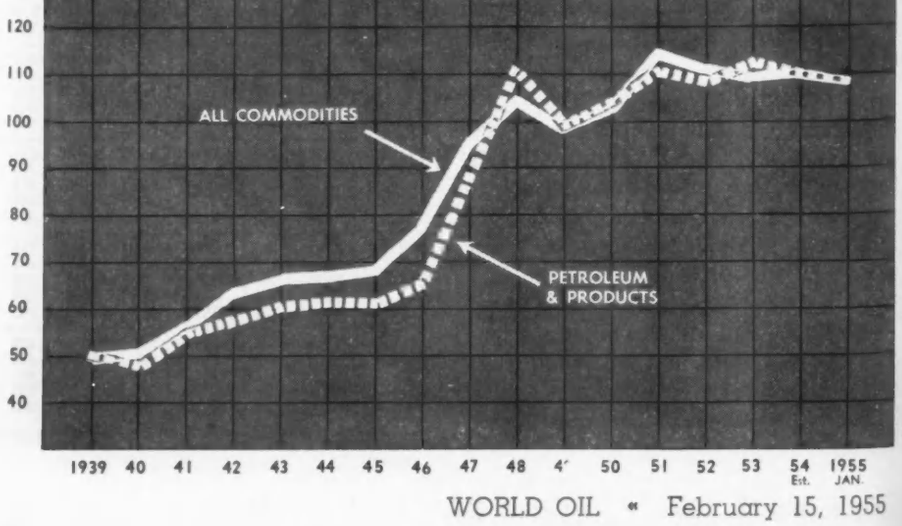
Weaknesses in refined product prices plagued the industry throughout the first half of 1954 and for a while seriously threatened the general crude oil price structure. But current prospects are better. Demand forecasts for 1955 are favorable with forecasters predicting that demand for all oils this year will range from 3 to 5.5 percent over last year. Therefore if the industry can adjust its over-all supply with actual demand requirements—with particular emphasis on lower supply needs during the second and third quarters of the year, in keeping with the normal seasonal downturn in demand—there should be no problems arising that would bring about deterioration of prices.

At the start of this year, the industry's balance of supply and demand and over-all inventories—except gasoline—are excellent. Above-ground stocks of crude oil are considered low by many industry economists and also it is predicted that domestic crude oil production for the full year may have to be expanded more than the 3.1 percent increase forecast by the U. S. Bureau of Mines. These sources, however, have issued warnings that the industry must adjust its new supply with the normal seasonal variations in demand if the experience of 1954 is to be avoided.

In face of a smaller than anticipated increase in demand, caused primarily by extremely mild winter weather in early 1954, domestic crude oil production and refinery throughput rates were maintained at relatively high levels. The result was a steady downward movement in petroleum prices during the year to the low point reached in July. Almost too late to prevent the refined product price decline from spreading to general crude oil field postings, the industry's rate of new supply was adjusted downward to balance with demand; and for the remainder of the year, light distillate and residual fuel oil prices commenced an upward movement. At the end of the year the over-all price structure for kerosine, heating oils, and residual fuel had become stable; prices had moved upward and were

INDEX OF WHOLESALE PRICES

1947-1949 = 100



firm. A much colder winter over most of the country than was experienced a year ago indicates a bright outlook for prices of these products for the remainder of the season.

Gasoline prices declined in most areas of the country during the summer and fall of 1954. But an unexpected upturn in demand at the end of the year, following only a small expansion for the first ten months of the year, checked the downward movement of motor fuel prices. Overproduction throughout 1954 and currently higher than desirable motor fuel inventories, however, continue to exert pressure on gasoline prices. Gasoline inventories will continue to accumulate until April.

There were some reductions in 1954 in prices of specific crudes, though a firming of refined product prices late in the year brought increases for some types of crude.

Pennsylvania grade crude was cut several times in 1954 before finally being raised back slightly late in the year. Bradford crude, which had been worth $4.05 per barrel in late 1953, was down to $3.23 September 1, 1954, and recovered to $3.35 on December 1. In other principal producing areas of the U. S., however, crude prices remained generally the same as established in 1953 following decontrol.

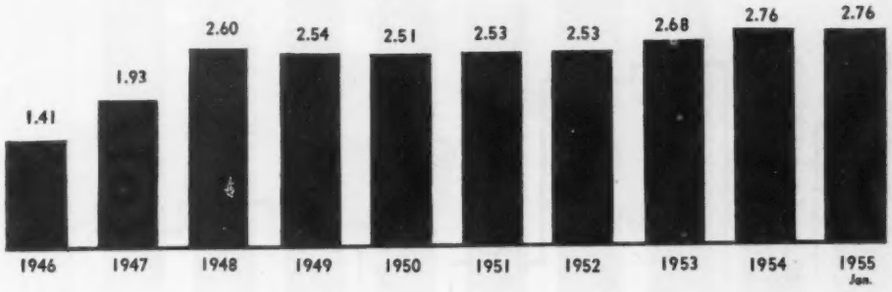
U. S. Average Prices of Crude Oil at Wells and Gasoline in 50 Cities, by Years

Sources: Crude prices from Bureau of Mines; gasoline from The Texas Co., via API.

YEAR	Crude Oil ($ per Bbl.)	Gasoline (¢ per Gallon)			
		Dealer's Net	Service Station		
			Excl. Tax	Tax	Incl. Tax
1918	1.98	....	25.12	0.00	25.12
1919	2.01	....	25.41	0.06	25.47
1920	3.07	....	29.74	0.09	29.83
1921	1.73	....	26.11	0.20	26.31
1922	1.61	....	24.82	0.38	25.20
1923	1.34	....	21.06	0.91	21.97
1924	1.43	....	19.46	1.48	20.94
1925	1.68	....	20.09	2.11	22.20
1926	1.88	17.44	20.97	2.41	23.38
1927	1.30	15.00	18.29	2.80	21.09
1928	1.17	14.83	17.90	3.04	20.94
1929	1.27	14.58	17.92	3.50	21.42
1930	1.19	12.48	16.17	3.78	19.95
1931	.65	9.65	12.98	4.00	16.98
1932	.87	10.08	13.30	4.63	17.93
1933	.67	9.42	12.41	5.41	17.82
1934	1.00	9.81	13.64	5.21	18.85
1935	.97	9.73	13.55	5.29	18.84
1936	1.09	10.21	14.10	5.35	19.45
1937	1.18	10.53	14.59	5.40	19.99
1938	1.13	10.04	14.07	5.44	19.51
1939	1.02	9.58	13.31	5.44	18.75
1940	1.02	9.08	12.75	5.66	18.41
1941	1.14	9.49	13.30	5.93	19.23
1942	1.19	10.44	14.46	5.97	20.43
1943	1.20	10.45	14.56	5.97	20.53
1944	1.21	10.49	14.62	5.97	20.59
1945	1.22	10.33	14.48	6.02	20.50
1946	1.41	10.40	14.69	6.08	20.77
1947	1.93	12.33	16.93	6.18	23.11
1948	2.60	14.55	19.54	6.34	25.88
1949	2.54	15.05	20.27	6.52	26.79
1950	2.51	15.10	20.08	6.68	26.76
1951	2.53	15.33	20.31	6.84	27.15
1952	2.53	15.27	20.24	7.32	27.56
1953	2.68	15.95	21.28	7.41	28.69
1954 Est.	2.76	16.19	21.59	7.48	29.07
1955 Jan.	2.76	15.91	21.26	7.50	28.76

CRUDE OIL PRICES IN U.S.

(DOLLARS PER BARREL)



Crude Price Changes in Mid-Continent, California, and West Texas, by Years

(Dollars Per Barrel)

DATE	Okla., Kans. 36-36.9° Gravity	Calif., Long Beach 27-27.9°	West Texas Sour 30-30.9°
1937: Prior to Jan. 1	$1.10	$1.10	$0.78
January 28	1.22	....	0.88
1938: October 12	1.02	....	0.75
1939: No Changes	....	....	....
1940: February 1	....	1.03	....
1941: March 29	....	....	0.82
April 1	1.07	....	....
April 24	....	1.09	....
May 20	1.17	....	....
May 21	....	....	0.92
May 23	....	1.15	....
1942: Feb. 3; frozen at Oct. 1, 1941 level	1.17	1.15	0.92
1943; 1944; 1945: No Changes; prices frozen	....	....	....
1946: April 1: OPA Raise	1.27	1.25	1.02
July 25: Oil Prices decontrolled	1.52	....	1.27
August 1	....	1.50	....
November 15	1.62	....	....
November 19	....	....	1.37
1947: March 10	1.87	....	1.62
March 19	....	1.75	....
July 1	....	1.95	....
October 15	2.07	....	....
October 16	....	....	1.82
December 6	2.57	....	2.32
December 27	....	2.45	....
1948: No Change	....	....	....
1949: June 1	....	2.37	....
1950: December 12	....	2.41	....
1951: Frozen at Jan. 25 level	2.57	2.41	2.32
1952: No Changes; frozen	....	....	....
1953: Feb. 16: decontrolled	....	2.76	....
June 15	2.82	....	2.32
1954: No Change	....	....	....

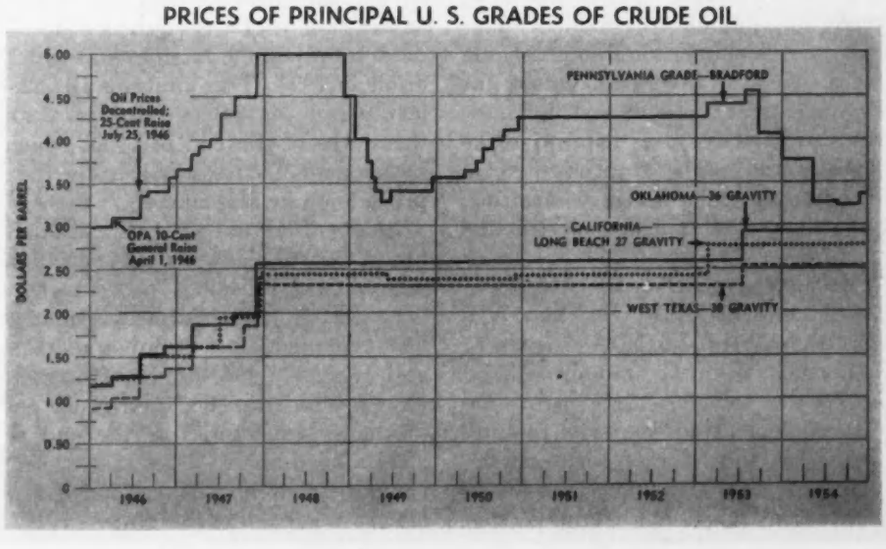
Changes in Prices of Bradford, Pennsylvania, Crude, by Years

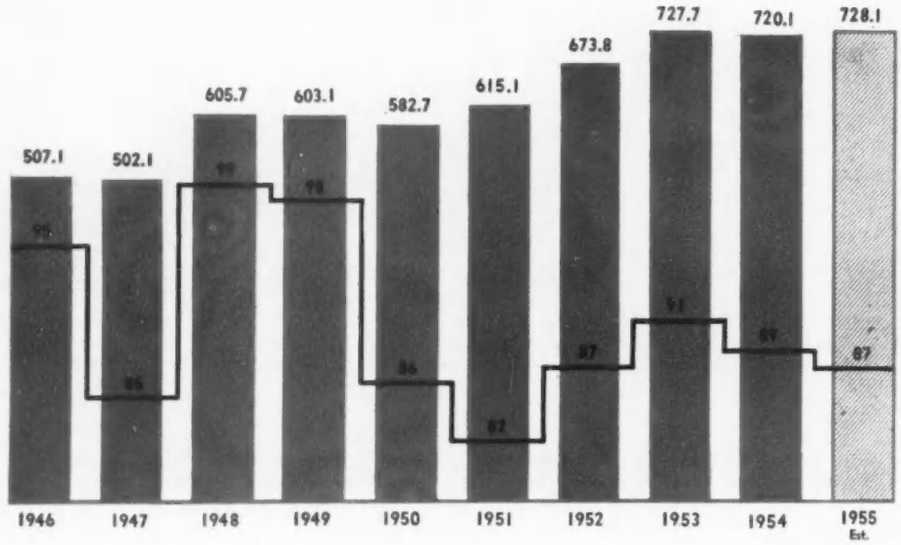
(Dollars Per Barrel)

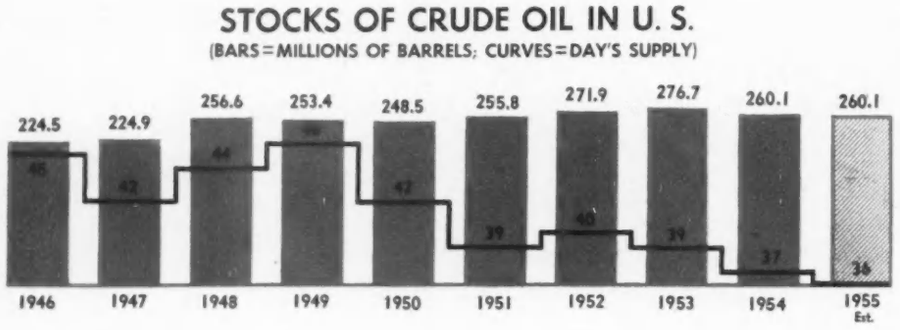
Date	Price	Date	Price	Date	Price
1937: Before Jan. 1	$2.15	1941: Jan. 27	$2.30	1948: Dec. 11	$4.50
Feb. 24	2.67	April 23	2.40		
June 7	2.82	May 20	2.55	1949: Jan. 21	4.00
Sept. 1	2.60	June 18	2.75	Mar. 11	3.75
Oct. 12	2.35	Aug. 14	2.98	April 1	3.55
Dec. 1	2.20	Aug. 23	2.75	April 13	3.40
		1942:		May 11	3.27
1938: Mar. 7	2.05	[1]Feb. 3	2.75	June 16	3.40
June 13	1.80	[2]Mar. 26	3.00	Dec. 12	3.54
Sept. 1	1.68	[3]1943:		1950: May 1	3.65
1939: Jan. 21	1.80	[3]1944:		June 21	3.75
Feb. 1	1.88	[3]1945:		July 19	3.89
Mar. 6	2.00			Aug. 25	4.00
Oct. 6	2.25	1946:		Oct. 9	4.10
Nov. 1	2.40	[4]April 1	3.10	Dec. 9	4.25
Dec. 1	2.50	[5]Aug. 1	3.35	[6]1951:	
1940: Jan 1	2.75	Sept. 1	3.41	[6]1952:	
May 22	2.50	Dec. 9	3.55	1953: Feb. 16	4.40
June 18	2.25	1947: Jan. 1	3.65	Aug. 1	4.55
July 12	2.00	Mar. 1	3.81	Sept. 21	4.05
Aug. 18	1.85	April 1	3.91		
Nov. 12	2.00	May 16	4.05	1954: Jan. 1	3.76
Dec. 17	2.15	July 1	4.30	May 20	3.26
		Sept. 1	4.50	Sept. 1	3.23
		Dec. 1	5.00	Dec. 1	3.35

[1] Frozen at Oct. 1, 1941 level. [2] Penn. grade raise granted. [3] No change; price frozen. [4] Raise granted by OPA. [5] Oil prices decontrolled July 25, 1946. [6] No change; price frozen at Jan. 25, 1951, level.

PRICES OF PRINCIPAL U. S. GRADES OF CRUDE OIL







Stocks of Oils . . . Comparatively small net increase in 1954 leaves inventories satisfactory.

THE U. S. OIL industry has entered 1955 in a comparatively good situation with regard to inventories of crude oil and refined products. This fact is among the conditions making for a generally favorable outlook for the industry. It augurs well for market conditions and helps to make prices stable. The firm markets in turn encourage drilling, wildcatting, and refinery and pipe line construction work.

At the end of 1954, U. S. stocks of all oils totaled 720,125,000 barrels, a net decrease of 7,613,000 barrels or 1.0 percent from the amount on hand at the end of 1953. The new total was equivalent to 89 days' requirements, on the basis of the total demand for all oils in 1954. The stocks a year ago represented 91 days' supply, at the rate of demand in 1953.

U. S. stocks of crude oil were down to approximately 260,124,000 barrels at the close of 1954, equivalent to 37 days' supply at the rate of demand for crude in 1954. This total was 16,552,000 barrels or 6.0 percent less than the stocks of the end of 1953, which represented 39 days' supply at the then prevailing rate of demand.

Stocks of natural gasoline and other natural gas liquids were larger than desirable in 1954 and continue that way in early 1955. Excess stocks have been conducive to unstable markets and relatively low prices of natural gasoline and liquefied petroleum gas products. Inventories at the end of 1954 totaled about 14,500,000 barrels, compared with approximately 10,500,000 barrels held at the close of 1953.

Total stocks of refined products at the end of 1954 aggregated 445,501,000 barrels, a net increase of 4,867,000 barrels or 1.1 percent over the end of 1953. This small increase, averaging 13,000 barrels daily, was a favorable contrast with the excessive accumulation of product stocks in 1953. During that year there was a net increase of the stocks of refined products amounting to 46,615,000 barrels, or an average of 128,000 barrels daily. In that year all the major products participated in the stock building.

Consequently, there were surplus stocks of gasoline, natural gas liquids, and other products at the beginning of 1954. The surplus stocks were a burden on markets during the greater part of the year, particularly since demand for petroleum products was lagging, and prices of some oils weakened. However, crude production and refinery runs were curtailed in the latter part of 1954, and demand improved, bringing about a better balance of supply and demand and helping to liquidate surplus stocks.

U. S. Stocks of All Oils and Crude Oil

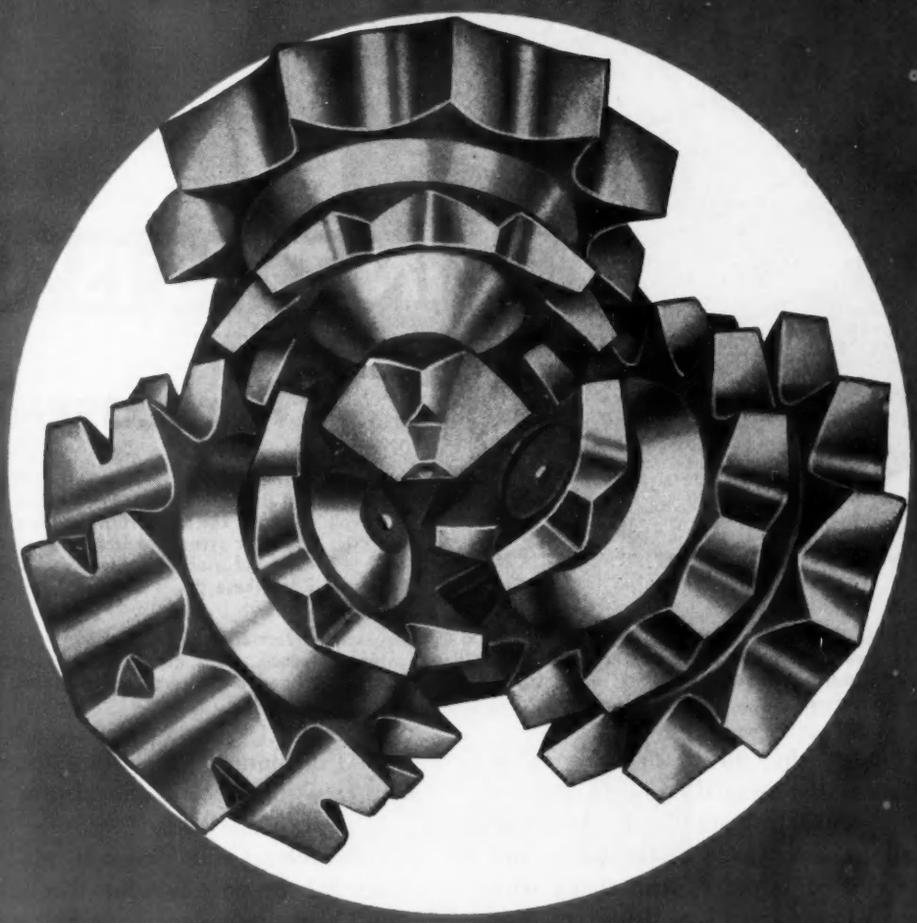
(Source: Bureau of Mines, except Dec., 1954, estimated.)

THOUSANDS OF BARRELS

END OF YEAR	ALL OILS		CRUDE OIL	
	Barrels	Days' Supply	Barrels	Days' Supply
			Refinable	
1918	193,411	165	144,336	125
1919	200,383	164	149,356	127
1920	209,845	156	149,448	103
1921	294,428	203	217,324	150
1922	385,349	232	295,708	181
1923	492,088	235	340,637	169
1924	520,287	236	360,475	171
1925	552,464	239	345,863	150
1926	527,084	210	315,029	133
1927	597,176	231	379,660	155
1928	621,010	224	392,629	148
1929	689,166	228	428,445	149
1930	665,497	224	411,882	153
1931	621,673	221	370,194	144
1932	590,106	230	339,875	145
1933	602,198	226	354,223	140
1934	564,350	199	337,254	128
1935	541,700	178	314,855	109
1936	519,229	155	288,579	91
1937	564,728	154	305,833	87
1938	567,703	156	274,165	79
1939	525,838	135	238,910	66
1940	563,277	141	264,079	70
1941	552,328	127	247,499	61
1942	497,940	116	234,889	61
1943	485,698	106	243,506	59
1944	477,089	95	220,862	46
1945	463,579	87	218,763	45
1946	507,094	95	224,473	45
1947	502,053	85	224,929	42
1948	607,856	99	246,572	43
			All Crude	
*1948	605,743	99	256,627	44
1949	603,119	98	253,356	46
1950	582,710	86	248,463	42
1951	634,109	85	255,783	39
1952	673,754	87	271,928	40
1953	727,738	91	276,676	39
1954	720,125	89	260,124	37
1955 Est.	728,125	87	260,124	36

* Revised; new basis.

H C Smith 3-CUTTER ROCK BITS



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Following

IN THIS ISSUE:

Forecast-Review

This February 15th WORLD OIL presents a 1954 review and predictions for 1955. Oil men everywhere rely on this issue as the authoritative source for industry data and economic trends. Molding this mass of material into readable and usable form for you is a major accomplishment. Read these pages and see how it is done.

Check the statistical index (page 65). There you'll see a quick guide to information on field discoveries, number of exploration crews and where they are working; wells drilling, footage forecasts, wells completed, rigs active; crude production by states, nations, continents; natural gas marketed production and proved reserves by states; and many other special features.

PLANNING. Under the direction of capable WORLD OIL staff men, the annual Forecast-Review Issue has to live up to exacting standards. Accurate information on all of last year's activities is not available until the end of January. And that's why we always wait until February 15 to bring you this statistical issue . . . which this year required an estimated 1,750 hours work by 14 staff members, 700 hours by officials and employees of 150 oil companies and 50 hours time by workers in state conservation agencies and geological departments.

Yes, more than 250 persons figures in the combined efforts involved in the research and correspondence necessary to compile the carefully checked data in this issue. The annual Forecast-Review number is the result of industry-wide cooperation from all these people.

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You can rely on the facts and figures you'll find in this issue. Data have been gleaned from county, state and federal agencies, private records of minor and major oil companies, special correspondents and confidential contacts by experienced WORLD OIL editors.

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When Ray Dudley and Warren Baker put their heads together, something usually results that is of help to the oil industry. These two men represent nearly 70 years combined experience in the petroleum publications field. Their ability to recognize industry trends in the embryonic stage has helped WORLD OIL become the leader in its field.

Widely known and honored throughout the world of oil, the publisher and editorial director combine their talents with that of the staff to bring you the prognostications in this issue of WORLD OIL.

Ray L. Dudley, publisher (above) and **Warren L. Baker,** editorial director (left), are widely known for three decades of oil industry service. They have been honored by and have worked closely with such organizations as the A.P.I., Nomads, Assn. of Petroleum Writers, A.I.M.M.E., Mid-Continent Oil & Gas Assn., International Petroleum Exposition, and Associated Business Publications.

Staff Contacts and Experience Benefit Readers

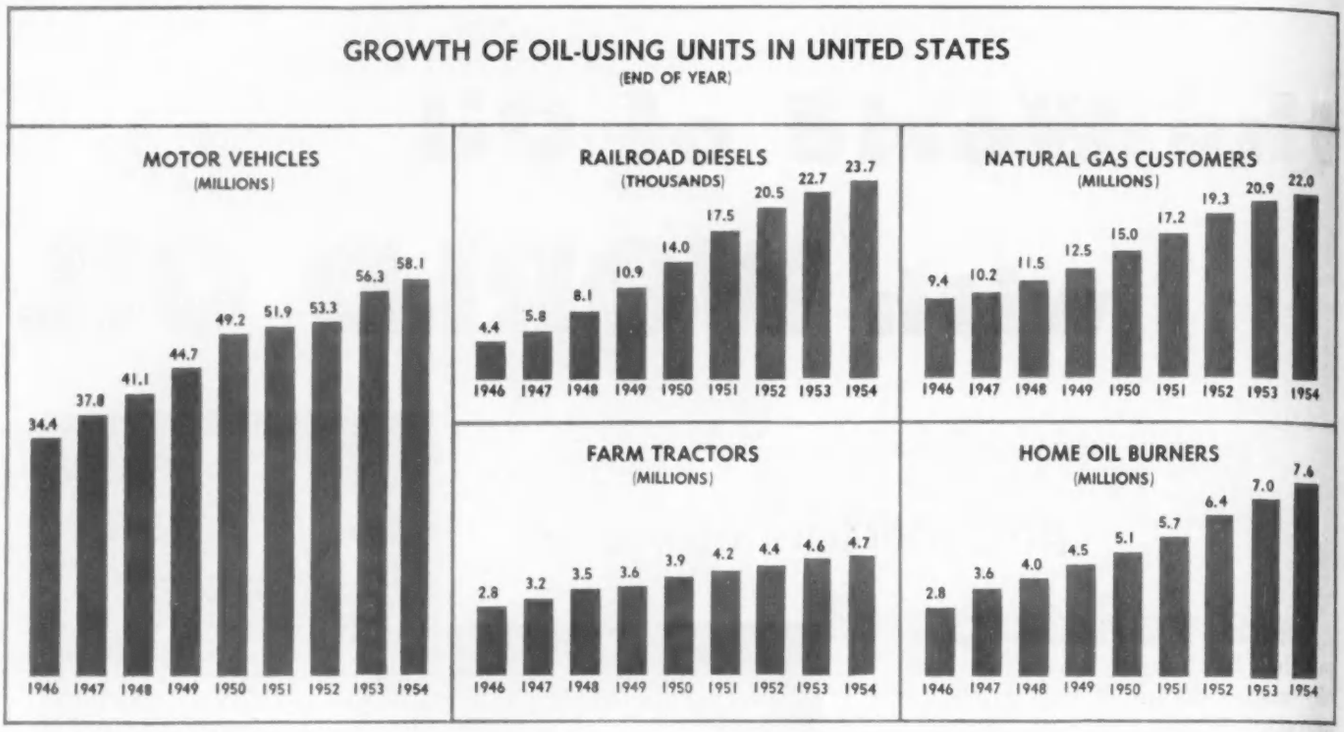
Working like a perfectly meshing machine, field experienced WORLD OIL editors and correspondents spend weeks assembling and checking the information in the annual Forecast-Review Issue.

Under the general supervision of two economic specialists, L. J. Logan and Cecil Smith, the mass of statistical data and reports are channeled into WORLD OIL's home office. Working with them are Managing Editor Al Reese, Drilling Editor Phil McLaughlin, Production Editor Hank Kastrop, and International Editor Don Kliewer. Double checking the source material from their areas are Western District Editor Gilbert Wilson of Los Angeles, Mid-Continent District Editor Tony Gibbon of Tulsa and Eastern District Editor Bob Spann of New York. Data are reviewed with industry authorities and then compiled and tabulated in the Houston office.

Result: The Forecast-Review Issue reflects the thinking of the best minds in the world of oil. A valuable service is performed for subscribers. And in this issue you have a factual, **authentic** reference source that can be used the year around. It's just one of the 14 high quality issues you get when you **follow the world of oil in WORLD OIL.**

WORLD OIL

HOUSTON, TEXAS



Oil-Using Units . . . No major leveling off seen in growth of oil-using units in U. S., though growth may be less spectacular in immediate future.

No MAJOR LETUP is indicated in the rate of growth of oil-using units in the U. S. The upward trend is expected to continue but not at the spectacular pace which existed in the early postwar years. This will call for greater volumes of petroleum products in the future.

Motor vehicles. Motor vehicles (passenger cars, trucks and buses) in the U. S. continue to increase at substantial annual rates. Faster population expansion in the future presages additional large-scale growth.

The 58.1 million vehicles in the U. S. at the end of 1954 represented a gain of 2.4 million during the past year, and contrasted with only 34.4 million in 1946, and with 44.7 million in 1949. Motor vehicle gasoline consumption has climbed from 605½ million barrels in 1946 to a peak of 998¾ million barrels in 1953, latest data available.

Railroad diesels. A phenomenal growth in railroad diesel locomotives has occurred in recent years. The 23,700 mainline diesel locomotives operating at the end of 1954 were five times more than in 1946 and double the 1949 number. A growth of only 1000 during the past year was a smaller increase than in preceding postwar years. The rate of gain will be relatively small in the future, conversion to diesels being mostly completed.

Railroad use of diesel oil has expanded sharply. In 1953, latest figures available, consumption of diesel oil by U. S. railroads reached 71⅓ million barrels, compared with only 12½ million barrels in 1946. However, larger consumption of diesel oil has replaced railroad use of fuel oil in oil burning steam locomotives, the latter having declined from 91⅔ million barrels in 1946 to but 23 million during 1953.

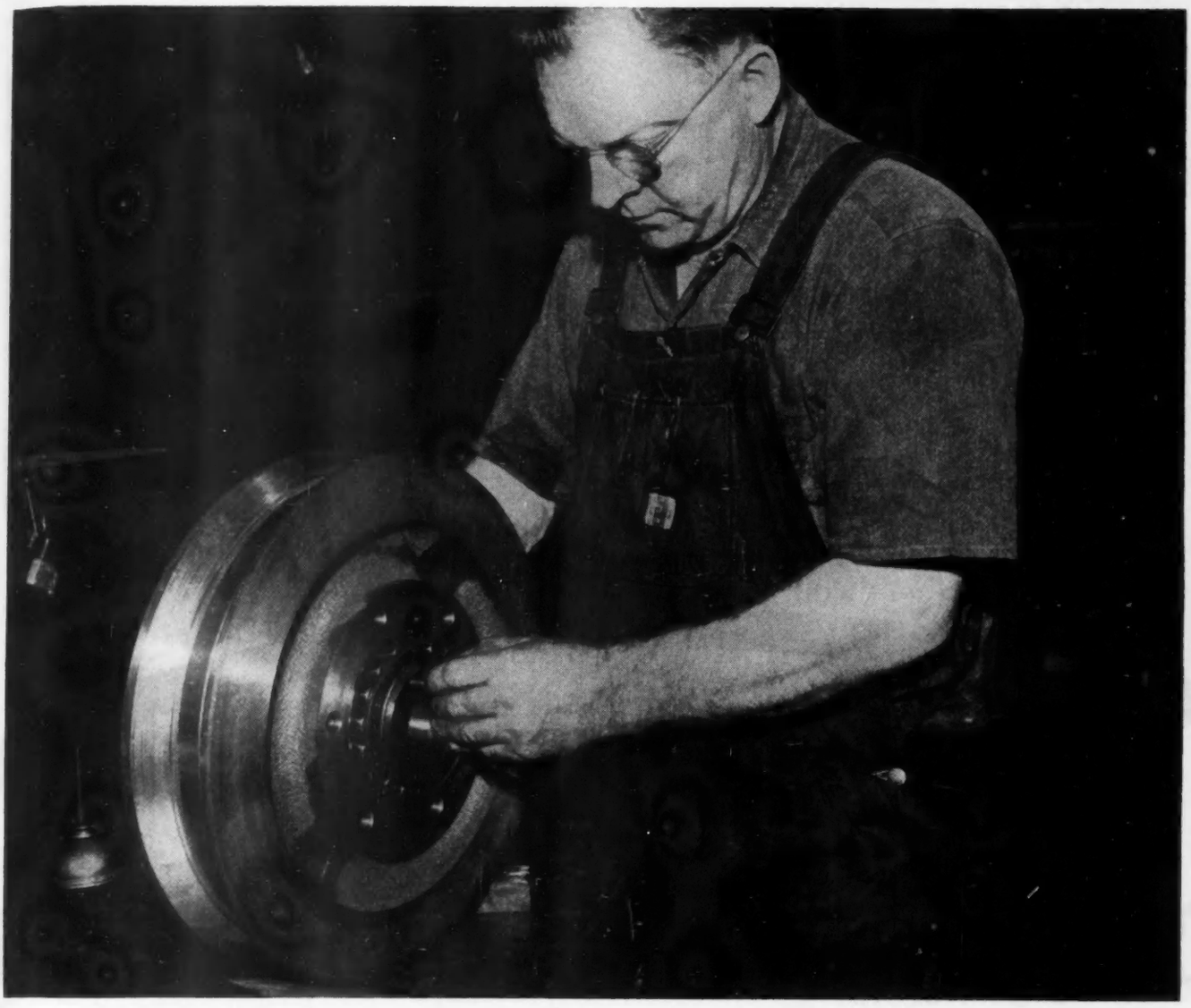
Natural gas customers. Due to expansion of transmission lines, there has been an amazing growth in U. S. natural gas customers during the past eight years. The 22 million natural gas customers at the end of 1954 was 2½ times more than in 1946, and 50 percent higher than in 1950. (In addition, several million customers in 1954 use natural gas mixed with manufactured gas.)

Consumption of natural gas more than doubled in the last eight years, rising from 4.0 trillion cubic feet in 1946 to 8.3 trillion cubic feet in 1954.

Home oil burners. Rapid natural gas expansion has not stopped the growth of home oil burners. Prospects that continued heavy residential construction will be needed in future years to keep pace with population growth presages further increases in oil burners in the years ahead.

Nearly three times as many oil burners were operating in U. S. homes at the end of 1954 as in 1946. The 7.6 million home oil burners at the close of 1954, contrasted with 7 million a year ago and 6.4 million two years ago. Consequently, heating oil sales totaled only 139⅔ million barrels in 1946, but amounted to 267½ million barrels during 1954.

Farm tractors. Mechanization of U. S. farms is continuing at a sizeable pace, with 4.7 million tractors at the end of 1954, in contrast with 2.8 million in 1946, and 3.6 million in 1949. Consequently, farm tractors consumed 99 million barrels of petroleum fuel in 1952, according to latest available data, in contrast with 60⅔ million barrels in 1946.



Why These Circular Forgings Have So Many Uses

It's become second nature for many manufacturers to call for Bethlehem forged-and-rolled circular forgings. These round forgings are so strong, and machine so beautifully, that they are top choice for many jobs. What's more, they come in sizes from 10 to 42 in. OD, giving them a still broader range of application.

Here are a few of the products being made today from these circular forgings: spur, bevel, herringbone, and other types of gears; double-flange crane-track wheels; industrial wheels of many kinds; turbine rotors and bucket wheels; clutch drums; brake drums; pipe flanges; sheave wheels and flywheels; tire molds and mold rings.

There are of course many others, some highly specialized. For instance, Filer & Stowell, world's largest builder of heavy-duty sawmill machinery, uses these blanks in the making of its carriage wheels. A sawmill carriage is subjected to some mighty heavy burdens, and the strength inherent in Bethlehem circular blanks makes design problems easier. Two kinds of Bethlehem wheel blanks are used at the F & S plant, and one of the finished wheels is shown in the photograph above.

In the making of your own products, there may be ways in which these sturdy forgings can add to the overall strength. If you would like to have additional information, just write for a copy of Booklet 216. It's filled with illustrations, and it contains many ideas that could be of real help to you.

BETHLEHEM STEEL COMPANY
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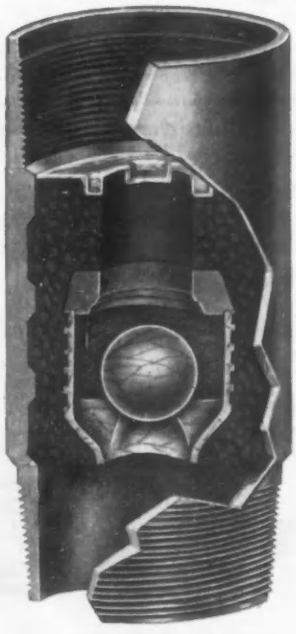
BETHLEHEM STEEL

Geyser Float Shoe
Fig. 322

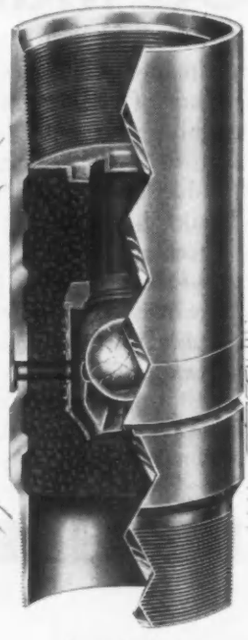
Geyser Guide Shoe
Fig. 222

Regular Float Shoe
Fig. 302

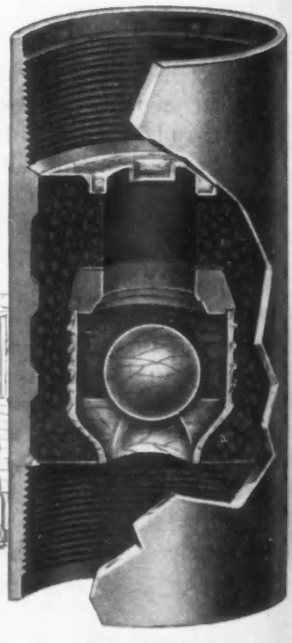
LARKIN OFFERS A COMPLETE LINE OF EQUIPMENT



M & F Float Collar
Fig. 401



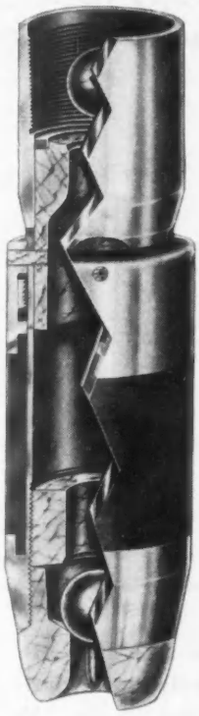
Geyser Float Collar
with Solid Bottom
Baffle, Fig. 421

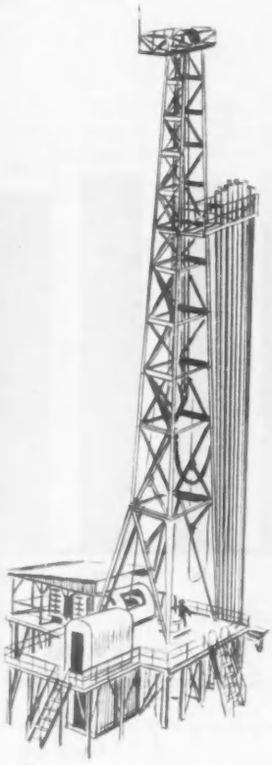


F & F Float Collar
Fig. 401

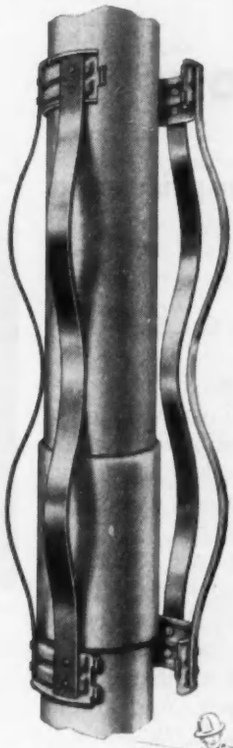
Cementrol Float Shoe with Flapper Valve Fig. 331

Cementrol Float Shoe Fig. 325-A

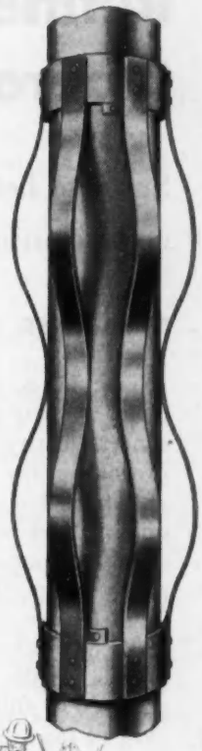


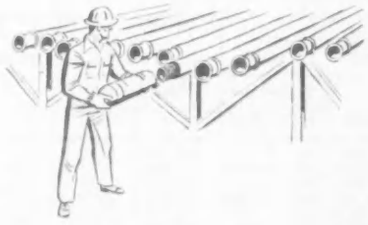


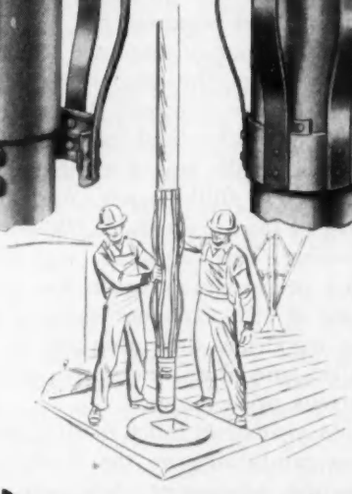
Lok-On Centralizer Fig. 905



Slip-On Centralizer Fig. 903







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Refinery Operations . . .

Squeeze between prices and costs continues.

By AL REESE, World Oil Staff

The U. S. refining industry entered the new year in a now-familiar squeeze between a downward price pressure in the wholesale markets and an upward cost pressure caused by quality level requirements.

Daily capacity continued to mount, partly under the need for a reserve for defensive purposes. At the end of 1952 capacity had been 7,585,000 barrels. At the end of another year it was 8,079,000 barrels. And at the close of 1954 it was 8,347,000 and still growing. This capacity was put to 86.3 percent maximum use at the close of 1954, as more industry leaders reconciled their thinking to curtailed runs as an alternative to a disastrous price slump.

At year's end much of the industry was capitalizing on the flexibility of its new equipment. Advanced catalytic cracking tools are being operated to a greater extent in such a manner as to vary the ratio of gasoline to middle distillate yields over a wide range. Thoughtful executives believe this practice is the answer to meeting sales requirements without an excessive buildup of stocks.

Such thinking was reflected in the reduction in crude runs to stills during the recent year. The cutback was only 0.7 percent, but was nevertheless noteworthy when compared with the 5 percent increase for the previous year. Daily average of crude runs was 6,953,100 during the recent year, compared with 6,999,600 for 1953.

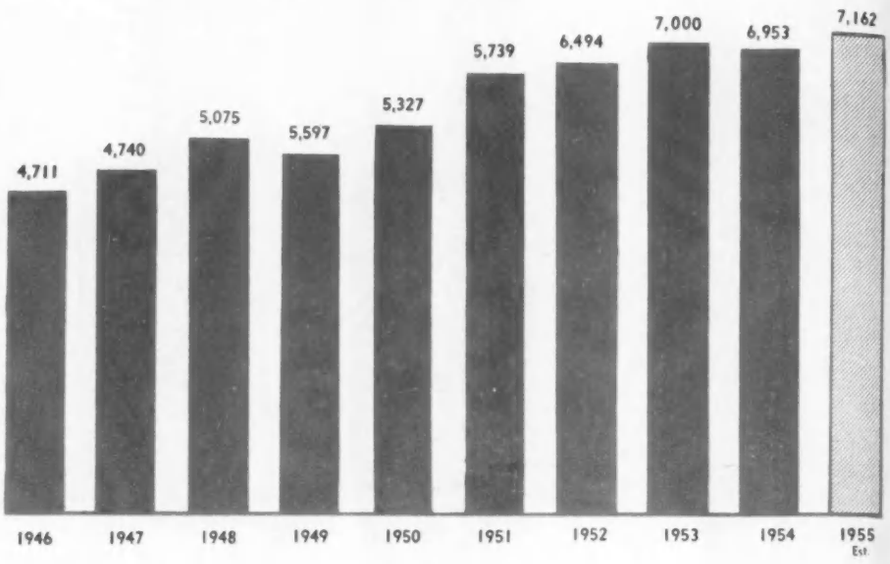
Cutbacks were made in virtually every principal refining area, though there were notable exceptions. Runs on the Louisiana Gulf Coast were up 3.6 percent, and in Arkansas and inland Louisiana there was a 2.3 percent hike. Biggest reduction came in inland Texas, which had a decline of 7.3 percent.

The Texas Gulf Coast repeated as the area with the largest crude runs. The total there was 616,725,000 barrels, resulting in a daily average of 1,689,600. This figure, however, represented a 0.5 percent slump from the previous year's operations.

Other busy areas were Illinois-Indiana-Kentucky with 1,273,200 barrels daily average crude runs to stills; the East Coast with 1,029,400 barrels per day; and California with 1,021,900 daily. All of these figures were below the respective refinery runs for the previous year.

U. S. CRUDE RUNS TO STILLS, BY YEARS

(THOUSANDS OF BARRELS DAILY)



U. S. Crude Runs to Stills and Refining Capacity, by Districts

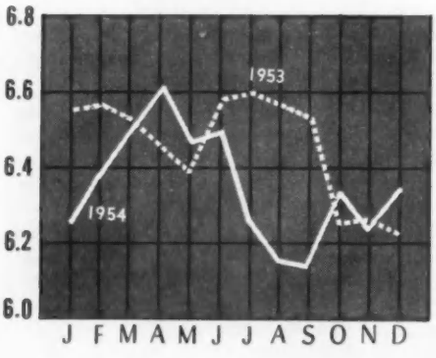
Runs from Bureau of Mines, except Nov.-Dec., 1954, from API; capacities from API.

(THOUSANDS OF BARRELS)

DISTRICT	DAILY CAPACITY AND USE IN DECEMBER						CRUDE RUN DURING YEAR				
	Capacity		Runs		% Operated		Total Amount		Daily Average		
	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	% Diff.
East Coast	1,151	1,220	1,017.7	1,043.6	88.4	85.5	381,340	375,732	1,044.7	1,029.4	— 1.5
Appalachian Dist. 1	132	111	118.3	97.6	89.3	87.9	39,676	37,768	108.7	103.5	— 4.8
Appalachian Dist. 2	94	97	81.0	78.3	86.5	80.7	32,622	30,464	89.4	83.5	— 6.6
Ill., Ind., Ky.	1,485	1,516	1,313.5	1,316.2	88.4	86.8	466,100	464,707	1,277.0	1,273.2	— 0.3
Okla., Kans., Mo.	694	733	572.2	650.0	82.4	88.7	214,978	219,116	589.0	600.3	+ 1.9
Texas Inland	318	291	240.2	233.0	75.5	80.1	93,400	86,625	255.9	237.3	— 7.3
Texas Gulf Coast	1,919	1,937	1,654.7	1,806.2	86.2	93.2	619,872	616,725	1,698.3	1,689.6	— 0.5
Louisiana Gulf Coast	624	687	549.3	596.0	88.1	86.8	200,910	208,170	550.4	570.3	+ 3.6
Ark., and La. Inland	101	98	82.7	86.6	82.0	88.4	31,238	31,976	85.6	87.6	+ 2.3
New Mexico	23	23	15.9	19.7	68.8	85.7	6,933	6,861	19.0	18.7	— 1.6
Other Rocky Mountain	274	281	244.5	243.8	89.3	86.8	85,842	86,806	235.2	237.8	+ 1.1
California	1,264	1,353	1,074.3	1,031.9	85.0	76.3	381,954	372,943	1,046.4	1,021.9	— 2.3
Total U. S.	8,079	8,347	6,964.3	7,202.9	86.2	86.3	2,554,865	2,537,893	6,999.6	6,953.1	— 0.7

U. S. CRUDE RUNS TO STILLS

(Milions of Barrels Daily)

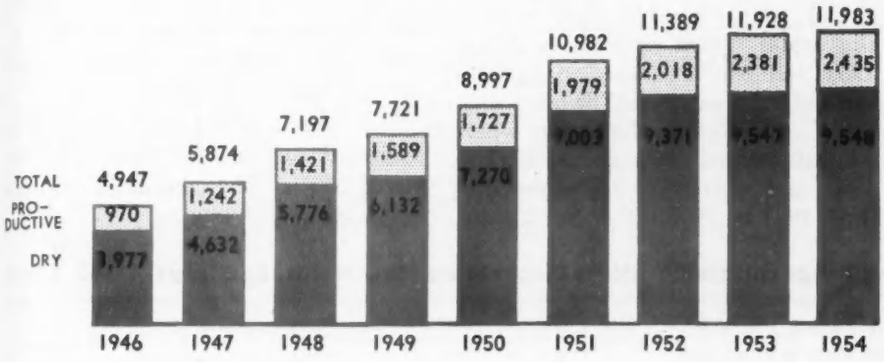


U. S. Crude Runs to Stills, by Years

Source: Bureau of Mines, except Nov.-Dec., 1954 from API.

(THOUSANDS OF BARRELS)

Year	Total	Daily	Year	Total	Daily
			1936	1,068,570	2,919
			1937	1,183,440	3,242
1918	326,025	893	1938	1,165,015	3,192
1919	361,520	990	1939	1,237,840	3,391
1920	433,915	1,186	1940	1,294,283	3,536
1921	443,363	1,215	1941	1,409,192	3,861
1922	500,706	1,372	1942	1,334,103	4,655
1923	581,238	1,592	1943	1,429,738	3,917
1924	643,719	1,759	1944	1,665,684	4,551
1925	739,920	2,027	1945	1,719,534	4,711
1926	779,264	2,135	1946	1,730,197	4,740
1927	828,835	2,271	1947	1,852,246	5,075
1928	913,295	2,295	1948	2,048,349	5,597
1929	987,708	2,706	1949	5,944,221	5,327
1930	927,447	2,541	1950	2,094,867	5,739
1931	894,608	2,451	1951	2,370,404	6,494
1932	819,997	2,240	1952	2,441,259	6,670
1933	861,254	2,360	1953	2,554,865	7,000
1934	895,636	2,454	1954	2,537,893	6,953
1935	965,790	2,646	1955 Est.	2,614,130	7,162



Exploration Record . . . New peak of 11,983 tests in 1954 due to fall in 1955.

By **CECIL W. SMITH,** World Oil Staff

A new all-time peak in the U. S. industry's search for new sources of oil and gas was reached in 1954, when wildcatters drilled 11,983 exploratory tests. That represented only a slight margin over the previous year's record of 11,928 tries, but it also marked the twelfth straight year that exploratory drilling has forged ahead to new records.

Since the opening of World War II, this increasing exploratory trend has continued as the industry upped its efforts to discover increasingly hard-to-find oil and gas pools to supply the nation's growing needs for petroleum products.

The outlook for 1955 is for an even greater exploratory effort to be exerted by industry. World Oil has estimated the drilling of 10,976 rank wildcats—not including new pay and extension tests that are included in the above exploratory totals—in 1955. That would prove to be a 1.5 percent gain over the 1954 peak of 10,815 wildcat wells.

The year's exploration was not only great in the number of wells completed, but it also batted better-than-average in successful tests. A total of 2435 wells found the mark for a score of 20.3 percent of all exploratory tests drilled, while a year earlier, 2381 successes amounted to a very good 20.0 percent.

Of 1954's 2435 successful tries, 2037 opened new oil, gas, or distillate pools and the remaining 398 proved major extensions to established fields. The new pools discovered were by far the greatest number credited to a single year. The previous high had been 1925 new pools in 1953.

Recorded in 1954 was the discovery of 1512 new oil pools for a new high for that category. A year earlier, the search for crude oil had resulted in the opening of 1458 new pools. Included in the later year's oil finds were 1079 new fields and 433 new oil pay horizons in older areas.

The 1954 record was the second time in history that as many as 1000 new oil fields were tapped and the first time that as many as 400 new oil pays were uncovered in a single year. In all fairness, it should be pointed out that 1953 came within four discoveries of reaching the 400 mark.

The year's rank wildcats numbering 10,815 were also at a new all-time high, but they did not quite occupy the same position relative to over-all

New Oil, Gas, and Distillate Sources Discovered in U. S., by Years

YEAR	Total New Sources			New Oil Sources			New Gas Sources			New Distillate Sources		
	Total	New Fields	New Pays	Total	New Fields	New Pays	Total	New Fields	New Pays	Total	New Fields	New Pays
1937	376	239	137	322	203	119	48	33	15	6	3	3
1938	423	264	159	373	229	144	42	31	11	8	4	4
1939	473	258	215	414	224	190	55	33	22	4	1	3
1940	492	309	183	428	261	167	62	46	16	2	2	0
1941	650	362	288	562	301	261	83	58	25	5	3	2
1941	523	348	175	451	288	163	57	47	10	15	13	2
1943	499	347	152	403	276	127	72	56	16	24	15	9
1944	633	460	173	475	326	149	117	102	15	41	32	9
1945	647	451	187	475	317	158	128	113	15	44	30	14
1946	688	412	276	513	308	205	104	75	29	71	29	42
1947	979	576	403	736	436	300	145	96	49	98	44	54
1948	1192	792	400	917	610	307	160	112	48	115	70	45
1949	1264	867	397	964	668	296	179	130	49	121	69	52
1950	1376	1015	361	1119	811	308	172	137	35	85	67	18
1951	1662	1226	436	1350	992	358	223	172	51	89	62	27
1952	1652	1267	385	1294	982	312	223	174	49	135	111	24
1953	1925	1418	507	1458	1062	396	311	259	52	156	97	59
1954	2037	1447	590	1512	1079	433	295	250	45	230	118	112

drilling as did the previous year's wildcatting. In 1954, rank wildcats amounted to 21.2 percent of all wells drilled for oil and gas, while in 1953 they accounted for 22.3 percent of the total. However, in the success department they made the best score ever recorded. Successful wildcats opened 1447 new oil, gas or distillate fields in 1954 for a record of 13.4 percent of all wildcats drilled. A year before, 1418 new field openers amounted to 13.2 percent of total drilled.

The 1954 wildcatting success record of 13.4 percent was considerably better than the 11.9 percent average achieved in the 17-year period, 1937-1953, which amounted to 11.9 percent.

Only one of the top three wildcatting states upped its activity during 1954, but two are expected to show some increase in 1955. The one gainer was Texas, No. 1 in the nation, where wildcats totaled 4892 against 4851 in 1953, and where they are expected to total 4962 in 1955. The No. 2 state, Kansas, saw a drop from 1040 wildcats in 1953 to 918 in 1954, but there activity is slated to gain slightly this year.

Oklahoma, in third position in the nation, had tests drop from 875 to 866 in 1954 and expects a further cut to 795 wildcats in 1955.

The year's largest gain occurred in Colorado, where rank wildcats numbered 643 in 1954 compared with the previous year's 339.

Ratio of Wildcatting to All Drilling and Proportion of Wildcats Discovering New Fields, by States, 1937-1954

	SEVENTEEN YEARS, 1937-1953						YEAR, 1954					
		*STRICT WILDCATS						*STRICT WILDCATS				
		TOTAL			PRODUCTIVE			TOTAL			PRODUCTIVE	
STATE or DISTRICT	Total New Wells Drilled for Oil or Gas	Number	Percent of All Wells	Dry	Number	Percent of All Strict Wildcats	Total New Wells Drilled for Oil and Gas	Number	Percent of All Wells	Dry	Number	Percent of All Strict Wildcats
Alabama	499	331	66.3	324	7	2.1	69	59	85.5	59	.....	.....
Arizona	53	53	100.0	53	.....	.....	10	10	100.0	8	2	20.0
Arkansas	4,956	1,233	24.9	1,126	107	8.7	580	112	19.3	108	4	3.6
California	30,309	4,318	14.2	4,064	254	5.9	2,432	378	15.5	348	30	7.9
Colorado	2,503	1,027	41.0	924	103	10.0	1,324	643	48.6	569	74	11.5
Florida	202	186	92.1	185	1	.5	31	29	93.5	28	1	3.4
Georgia	55	55	100.0	55	.....	.....	8	8	100.0	8	.....	.....
Idaho	12	12	100.0	12	.....	.....	.....	1	.....	1	.....	.....
Illinois	41,137	8,675	21.1	8,187	488	5.6	3,260	620	19.0	594	26	4.2
Indiana	12,057	3,507	29.1	3,198	309	8.8	865	289	33.4	278	11	3.8
Iowa	23	23	100.0	23	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	44,014	8,217	18.7	6,953	1,264	15.4	4,191	918	21.9	765	153	16.7
Kentucky	17,392	1,782	10.2	1,607	175	9.8	1,377	81	5.9	57	24	29.6
Louisiana	27,875	3,991	14.3	3,431	560	14.0	3,648	470	12.9	394	76	16.2
North Louisiana	14,540	2,156	14.8	1,983	173	8.0	1,946	188	9.7	174	14	7.4
South Louisiana	13,335	1,835	13.8	1,448	387	21.1	1,702	282	16.6	220	62	22.0
Maryland	91	12	13.2	9	3	25.0	.....	.....	.....	.....	.....	.....
Michigan	14,118	4,470	31.7	4,147	323	7.2	555	279	41.3	217	12	5.2
Mississippi	4,322	1,654	38.3	1,554	100	6.0	450	182	40.4	176	6	3.3
Missouri	943	248	26.3	244	4	1.6	11	6	54.5	6	.....	.....
Montana	4,428	586	13.2	518	68	11.6	349	116	33.2	104	12	10.3
Nebraska	1,220	686	56.2	625	61	8.9	469	193	41.2	159	34	17.6
Nevada	14	14	100.0	14	.....	.....	12	12	100.0	11	1	8.3
New Jersey	1	1	100.0	1	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico	10,448	1,304	12.5	1,059	245	18.8	1,166	219	18.8	157	62	28.3
New York	13,599	105	.8	102	3	2.8	316	.....	.....	.....	.....	.....
North Carolina	19	19	100.0	19	.....	.....	.....	.....	.....	.....	.....	.....
North Dakota	399	140	35.1	124	16	11.4	296	112	37.8	110	2	1.8
Ohio	18,829	456	2.4	405	51	11.2	1,062	13	1.2	13	.....	.....
Oklahoma	56,236	7,428	13.2	6,233	1,195	16.1	7,829	866	11.1	726	140	16.2
Oregon	13	13	100.0	13	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	31,933	143	.4	105	38	26.6	588	1	0.2	1	.....	.....
South Carolina	7	7	100.0	7	.....	.....	.....	.....	.....	.....	.....	.....
South Dakota	71	71	100.0	71	.....	.....	20	15	75.0	14	1	6.7
Tennessee	609	326	53.5	306	20	6.1	.....	.....	.....	.....	.....	.....
Texas	191,657	36,337	18.9	31,367	4,970	13.7	18,427	4,892	26.5	4,187	705	14.4
Dist. 1: South Central	6,730	2,787	41.4	2,610	177	6.4	1,189	355	29.9	321	34	9.6
Dist. 2: Middle Gulf	[1]	[1]	.....	[1]	[1]	.....	815	307	37.7	270	37	12.1
Dist. 3: Upper Gulf	18,956	3,477	18.3	2,999	478	13.7	1,755	452	25.8	410	42	9.3
Dist. 4: L. Gulf-S.W.	34,369	7,923	23.1	6,821	1,102	13.9	1,412	420	29.7	366	54	12.9
Dist. 5: East Central	[2]	[2]	.....	[2]	[2]	.....	320	158	49.4	155	3	1.9
Dist. 6: Northeast	16,712	2,561	15.3	2,364	197	7.7	777	186	23.9	177	9	4.8
Dist. 7-B: N. Central	[3]	[3]	.....	[3]	[3]	.....	3,026	1,136	37.5	935	201	17.7
Dist. 7-C: W. Central	[4]	[4]	.....	[4]	[4]	.....	1,283	414	32.3	350	64	15.5
Dist. 8: West	46,861	5,455	11.6	4,583	872	16.0	2,876	474	16.5	368	106	22.4
Dist. 9: North	57,675	13,901	24.1	11,775	2,126	15.3	4,022	914	22.7	777	137	15.0
Dist. 10: Panhandle	10,354	233	2.3	215	18	7.7	952	76	8.0	58	18	23.7
Utah	336	219	65.2	196	23	10.5	69	50	72.5	45	5	10.0
Virginia	156	36	23.1	27	9	25.0	.....	.....	.....	.....	.....	.....
Washington	33	33	100.0	33	.....	.....	6	5	83.3	5	.....	.....
West Virginia	12,750	138	1.1	86	52	37.7	572	3	0.5	3	.....	.....
Wyoming	5,642	1,066	18.9	895	171	16.0	1,117	283	25.3	217	66	23.3
Total U. S.	548,961	88,922	16.2	78,302	10,620	11.9	51,109	10,815	21.2	9,368	1,447	13.4
U.S. Total by Years, 1937-1953												
1937	32,474	2,182	6.7	1,943	239	11.0						
1938	27,764	2,443	8.8	2,179	264	10.8						
1939	26,654	2,746	10.3	2,488	258	9.4						
1940	29,161	2,982	10.2	2,672	210	10.4						
1941	30,149	3,409	11.3	3,047	362	10.6						
1942	19,729	3,001	15.2	2,652	349	11.6						
1943	18,641	3,298	17.7	2,951	347	10.5						
1944	23,733	3,885	16.4	3,425	460	11.8						
1945	24,482	3,946	16.1	3,486	460	11.7						
1946	28,145	4,242	15.1	3,830	412	9.7						
1947	31,084	4,983	16.0	4,407	576	11.6						
1948	37,448	6,410	17.1	5,618	792	12.4						
1949	37,812	6,781	17.9	5,914	867	12.8						
1950	42,173	7,891	18.7	6,876	1,015	12.9						
1951	45,996	9,778	21.3	8,552	1,226	12.5						
1952	45,275	10,239	22.6	8,972	1,267	12.4						
1953	48,242	10,743	22.3	9,325	1,418	13.2						

* Exclusive of all tests seeking new pay zones or outposts attempting to extend known fields.
[1] Dist. 2 included with Dist. 4.
[2] Dist. 5 included with Dist. 6.
[3] Dist. 7-B included with Dist. 9.
[4] Dist. 7-C included with Dist. 8.

Results of Exploratory Drilling in the United States in 1954, by States, and Comparison with Earlier Years

(Based on Data Compiled by Staff of World Oil)

Part 1: Productive Tests

STATE or DISTRICT or YEAR	OIL									DISTILLATE									GAS									TOTAL PRODUCTIVE		
	New Fields			New Pays			Extensions			New Fields			New Pays			Extensions			New Fields			New Pays			Extensions					
	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth	No.	Footage	Avge. Depth
State or District:																														
Arizona	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	2	12,829	6415	..	.....	.....	..	.....	.....	2	12,829	6415
Arkansas	3	14,669	4890	6	23,851	3975	4	15,206	3802	..	.....	.....	..	.....	.....	..	.....	.....	1	5,970	5970	2	7,888	3944	..	.....	.....	16	67,584	4224
California	23	120,468	5238	11	53,516	4865	6	38,664	6444	..	.....	.....	..	.....	.....	..	.....	.....	7	28,228	4033	1	5,257	5257	2	5,662	2831	50	251,795	5036
Colorado	50	268,250	5365	3	17,582	5861	12	66,502	5542	4	22,184	5546	..	.....	.....	..	.....	.....	20	108,583	5429	1	7,755	7755	1	3,503	3503	91	494,359	5433
Florida	1	11,557	11557	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	211,557	11557
Illinois	26	60,038	2309	34	90,771	2670	64	161,766	2528	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	124	312,575	2521
Indiana	9	16,845	1872	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	2	3,522	1761	..	.....	.....	..	.....	.....	11	20,367	1852
Kansas	123	489,546	3980	4	14,178	3545	7	25,838	3691	..	.....	.....	..	.....	.....	..	.....	.....	30	144,162	4805	1	4,960	4960	1	4,952	4952	166	683,636	4118
Kentucky	23	48,286	2099	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	1,150	1150	..	.....	.....	..	.....	.....	24	49,436	2060
Louisiana	34	326,281	9597	49	480,054	9797	11	104,384	9489	25	255,858	10234	48	546,182	11379	5	57,214	11443	17	183,972	10822	11	110,743	10068	10	106,333	10633	210	2,171,021	10338
North Louisiana	7	40,031	5719	8	62,885	7861	4	28,624	7156	4	28,659	7165	3	20,534	6845	1	7,047	7047	3	23,137	7712	4	25,965	6491	2	10,787	5394	36	247,669	6880
South Louisiana	27	286,250	10602	41	417,169	10175	7	75,760	10823	21	227,199	10819	45	525,648	11681	4	50,167	12542	14	160,835	11488	7	84,778	12111	8	95,546	11943	174	1,923,352	11054
Michigan	12	32,234	2686	1	3,901	3901	2	3,022	1511	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	4,224	4224	1	4,419	4419	17	47,800	2812
Mississippi	5	42,177	8435	1	7,787	7787	..	.....	.....	..	.....	.....	..	.....	.....	1	8,906	8906	1	4,395	4395	..	.....	.....	..	.....	.....	8	63,265	7908
Montana	9	46,330	5148	2	20,114	10057	2	12,890	6445	..	.....	.....	..	.....	.....	..	.....	.....	3	11,095	3698	..	.....	.....	..	.....	.....	16	90,429	5652
Nebraska	30	175,137	5838	2	12,681	6341	8	45,102	5638	..	.....	.....	..	.....	.....	..	.....	.....	4	18,764	4691	..	.....	.....	..	.....	.....	44	251,684	5720
Nevada	1	10,358	10358	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	10,358	10358
New Mexico	21	181,161	8627	5	41,056	8211	9	41,464	4607	2	20,702	10351	3	38,667	12889	..	.....	.....	39	183,180	4697	2	6,887	3444	9	26,186	2910	90	539,303	5992
North Dakota	2	18,039	9020	2	17,641	8821	3	19,803	6601	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	7	55,483	7926
Ohio	..	.....	.....	..	.....	.....	3	10,717	3572	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	4	9,304	2326	7	20,021	2860
Oklahoma	107	507,712	4745	29	157,081	5417	67	311,324	4647	14	91,045	6503	1	4,877	4877	4	33,738	8435	19	84,829	4465	2	9,302	4651	4	21,670	5418	247	1,221,578	4946
Pennsylvania	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	7,600	7600	1	7,600	7600
South Dakota	1	9,335	9335	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	1	9,335	9335
Texas	538	2,837,265	5274	277	1,822,957	6581	116	674,172	5812	73	608,057	8330	59	504,115	8544	17	148,161	8715	94	484,888	5158	23	136,510	5935	17	78,983	4646	1214	7,295,108	6009
Dist. 1: S. Central	26	67,102	2581	7	28,186	4027	10	39,127	3913	2	17,034	8517	1	8,529	8529	2	17,086	8543	6	27,905	4651	1	7,433	7433	2	2,096	1048	57	214,498	3763
Dist. 2: Middle Gulf	7	44,552	6365	8	55,241	6905	3	21,720	7240	14	116,153	8297	3	23,580	7860	1	8,512	8512	16	99,937	6246	5	30,189	6038	3	16,659	5553	60	416,543	6942
Dist. 3: Upper Gulf	23	212,378	9234	68	512,091	7531	2	19,596	9798	15	150,093	10006	25	233,336	9333	5	43,178	8636	4	25,947	6487	5	29,986	5997	1	4,367	4367	148	1,230,972	8317
Dist. 4: L. Gulf-SW	25	180,807	7232	60	381,585	6360	2	9,366	4683	23	189,691	8247	22	175,713	7987	6	54,172	9029	6	37,640	6273	5	30,008	6002	2	5,175	2588	151	1,064,157	7047
Dist. 5: East Cent	2	6,897	3449	1	2,671	2671	1	1,825	1825	..	.....	.....	..	.....	.....	..	.....	.....	1	9,132	9132	..	.....	.....	..	.....	.....	5	20,525	4105
Dist. 6: Northeast	4	23,031	5758	5	31,947	6389	..	.....	.....	4	27,544	6886	3	20,285	6762	1	6,864	6864	1	11,511	11511	..	.....	.....	1	7,100	7100	19	128,282	6752
Dist. 7-B: N. Cent	170	569,637	3351	27	118,309	4382	14	43,487	3106	1	4,657	4657	..	.....	.....	..	.....	.....	30	87,529	2918	..	.....	.....	2	4,839	2420	244	828,458	3395
Dist. 7-C: W. Cent	49	281,099	5737	19	109,435	5760	10	63,929	6393	4	27,856	6964	1	5,782	5782	..	.....	.....	11	51,948	4723	2	11,466	5733	3	13,445	4482	99	564,960	5707
Dist. 8: West	98	835,309	8524	39	361,773	9276	50	387,968	7759	3	25,979	8660	2	18,979	9490	1	14,774	14774	5	40,876	8175	3	15,366	5122	1	13,770	13770	202	1,714,794	8489
Dist. 9: North	129	584,015	4527	41	208,069	5075	23	80,854	3515	4	29,773	7443	1	5,314	5314	..	.....	.....	4	22,999	5750	1	4,808	4808	1	5,266	5266	204	941,098	4613
Dist. 10: Panhandle	5	32,438	6488	2	13,650	6825	1	6,300	6300	3	19,277	6426	1	12,597	12597	1	3,575	3575	10	69,464	6946	1	7,254	7254	1	6,266	6266	25	170,821	6833
Utah	3	20,129	6710	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	..	.....	.....	2	9,063	4532	..	.....	.....	..	.....	.....	5	29,192	5838
Wyoming	58	383,972	6620	7	54,425	7775	6	29,486	4914	..	.....	.....	1	5,924	5924	..	.....	.....	8	48,795	6099	1	1.566	1566	1	5,782	5782	82	529,950	6463
U. S. Total, 1954	1079	5,619,789	5208	433	2,817,595	6507	320	1,560,340	4876	118	997,846	8456	112	1,099,765	9819	27	248,019	9186	250	1,333,425	5334	45	295,092	6558	51	274,394	5380	2435	14,246,265	5851
Earlier Years:																														
1937	203	831,123	4094	119	615,007	5168	3	9,036	3012	3	19,377	6459	3	24,574	8191	..	.....	.....	33	77,389	2345	15	51,145	3410	..	.....	.....	379	1,627,651	4295
1938	229	944,455	4124	144	815,186	5661	7	25,027	3575	4	23,657	5914	4	27,115	6779	..	.....	.....	31	102,440	3350	11	49,634	4512	3	12,042	4014	433	1,999,556	4618
1939	224	782,289	3492	190	998,595	5256	..	.....	.....	1	7,999	7999	3	24,709	8236	..	.....	.....	33	103,450	3135	22	92,626	4210	..	.....	.....	473	2,009,668	4249
1940	262	957,167	3667	167	914,442	5476	..	.....	.....	2	12,792	6396	..	.....	.....	..	.....	.....	46	122,439	2662	16	55,983	3499	..	.....	.....	493	2,062,823	4193
1941	301	1,165,966	3874	261	1,335,648	5117	..	.....	.....	3	23,505	7835	2	7,109	3555	..	.....	.....	58	177,974	3069	25	89,263	3571	..	.....	.....	650	2,799,465	4307
1942	288	1,199,382	4165	163	879,116	5393	..	.....	.....	13	121,620	9355	2	13,517	6759	..	.....	.....	48	167,428	3563	10	50,712	5071	..	.....	.....	524	2,431,775	4650
1943	276	1,232,396	4465	127	565,454	4452	132	559,090	4236	15	140,564	9371	9	88,031	9781	3	25,589	8530	56	212,814	3800	16	90,372	5648	10	58,996	5990	644	2,973,306	4617
1944	326	1,422,250	4363	149	731,764	4911	135	659,987	4889	32	250,228	7820	9	75,436	8382	10	79,797	7980	102	417,944	4097	15	95,099	6340	27	111,174	4118	805	3,843,679	4775
1945	317	1,503,763	4774	158	894,688	5663	154	702,822	4564	30	269,915	8997	14	140,464	10033	6	54,162	9027	113	486,529	4306	15	67,455	4497	70	216,103	3087	877	4,335,901	4944
1946	308	1,359,787	4415	205	1,227,305	5987	160	707,585	4422	29	264,441	9119	42	411,425	9796	7	63,111	9016	75	272,564	3634	29	166,588	5744	115	406,774	3537	970	4,879,580	5030
1947	436	1,999,100	4585	300	1,564,181	5214	169	693,950	4106	44	352,691	8016	54	505,112	9354	17	136,258	8015	96	403,038	4198	49	223,026	4552	77	254,076	3300	1242	6,131,432	4937
1948	610	2,760,127	4525	307	1,714,345	5584	170	758,977	4465	70	626,026	8943	45	432,625	9614	18	167,441	9302	112	514,990	4598	48	259,025	5396	41	162,801	3971	1421	7,396,357	5205
1949	668	3,027,759	4533	296	1,666,576	5630	273	1,233,190	4517	69	644,454	9340	52	459,017	8827	16	131,981	8249	130	626,058	4816	49	220,023	4490	36	141,146	3921	1589	8,150,204	5129
1950	811	3,607,484	4448	308	1,791,195	5816	290	1,388,816	4789	67	572,807	8549	18	164,699	9150	12	101,512	8459	137	679,851	4962	35	171,314	4895	49	221,808	4527	1727	8,699,486	5037
1951	992	4,767,425	4806	358	1,979,258	5529	242	1,226,022	5066	62	564,243	9101	27	231,253	8565	20	142,836	7142	172	937,257	5449	51	283,873	5566	55	253,494	4609	1979	10,385,661	5248
1952	982	4,751,818	4839	312	1,816,294	5821	292	1,406,498	4817	111	1,038,256	9354	24	195,502	8146	16	133,414	8338	174	924,735	5315	49	252,480	5153	58	319,288	5505	2018	10,838,285	5371
1953	1062	5,322,266	5012	396	2,420,296	6112	345	1,546,656	4483	97	833,326	8591	59	502,206	8512	28	230,097	8218	259	1,326,976	5123	52	328,584	6319	83	490,657	5912	2381	13,001,064	5460

Results of Exploratory Drilling in the United States in 1954, by States and by Years

Part 2: Unproductive Tests and Total Exploratory Tests

STATE or DISTRICT or YEAR	DRY WILDCATS			DRY NEW PAY TESTS			DRY OUTPOSTS			TOTAL DRY			TOTAL EXPLORATORY TESTS		
	No.	Footage	Average Depth	No.	Footage	Average Depth	No.	Footage	Average Depth	No.	Footage	Average Depth	No.	Footage	Average Depth
State or District:															
Alabama	59	312,450	5296	....	.....	....	1	3,944	3944	60	316,394	5273	60	316,394	5273
Arizona	8	30,774	3847	....	.....	....	....	.....	....	8	30,774	3847	10	43,603	4360
Arkansas	108	418,961	3879	....	.....	....	4	13,466	3367	112	432,427	3861	128	500,011	3906
California	348	1,564,036	4494	....	.....	....	8	46,978	5872	356	1,611,014	4525	406	1,862,809	4588
Colorado	569	3,131,375	5503	....	.....	....	21	107,900	5138	590	3,239,275	5490	681	3,733,634	5483
Florida	28	161,060	5752	....	.....	....	....	.....	....	28	161,060	5752	29	172,617	5952
Georgia	8	20,508	2564	....	.....	....	....	.....	....	8	20,508	2564	8	20,508	2564
Idaho	1	2,372	2372	....	.....	....	....	.....	....	1	2,372	2372	1	2,372	2372
Illinois	594	1,273,168	2143	....	.....	....	....	.....	....	594	1,273,168	2143	718	1,585,743	2209
Indiana	278	396,445	1426	....	.....	....	....	.....	....	278	396,445	1426	289	416,812	1442
Kansas	765	2,985,400	3902	....	.....	....	12	42,806	3567	777	3,028,206	3897	943	3,711,842	3936
Kentucky	57	114,315	2006	....	.....	....	....	.....	....	57	114,315	2006	81	163,751	2022
Louisiana	394	3,278,834	8322	....	.....	....	24	220,659	9194	418	3,499,493	8372	628	5,670,514	9029
North Louisiana	174	935,305	5375	....	.....	....	4	15,423	3856	178	950,728	5341	214	1,198,397	5600
South Louisiana	220	2,343,529	10652	....	.....	....	20	205,236	10262	240	2,548,765	10620	414	4,472,117	10802
Michigan	217	544,347	2509	....	.....	....	....	.....	....	217	544,347	2509	234	592,147	2531
Mississippi	176	1,194,577	6787	....	.....	....	6	37,189	6198	182	1,231,766	6768	190	1,295,031	6816
Missouri	6	8,133	1356	....	.....	....	....	.....	....	6	8,133	1356	6	8,133	1356
Montana	104	498,194	4790	....	.....	....	....	.....	....	104	498,194	4790	120	588,623	4905
Nebraska	159	856,657	5388	....	.....	....	8	42,183	5273	167	898,840	5382	211	1,150,524	5453
Nevada	11	51,354	4669	....	.....	....	....	.....	....	11	51,354	4669	12	61,712	5143
New Mexico	157	908,690	5788	....	.....	....	1	2,024	2024	158	910,714	5764	248	1,450,017	5847
North Dakota	110	522,980	4754	....	.....	....	....	.....	....	110	522,980	4754	117	578,463	4944
Ohio	13	54,028	4156	....	.....	....	....	.....	....	13	54,028	4156	20	74,049	3702
Oklahoma	726	3,031,669	4176	....	.....	....	28	103,549	3698	754	3,135,218	4158	1,001	4,356,796	4352
Pennsylvania	1	8,476	8476	....	.....	....	....	.....	....	1	8,476	8476	2	16,076	8038
South Dakota	14	71,072	5077	....	.....	....	....	.....	....	14	71,072	5077	15	80,407	5360
Texas	4,187	19,482,168	4653	....	.....	....	66	464,335	7035	4,253	19,946,503	4690	5,467	27,241,611	4983
Dist. 1: South Central	321	1,040,855	3243	....	.....	....	5	24,212	4842	326	1,065,067	3267	383	1,279,565	3341
Dist. 2: Middle Gulf	270	1,675,192	6204	....	.....	....	4	21,290	5323	274	1,696,482	6192	334	2,113,025	6326
Dist. 3: Upper Gulf	410	3,226,501	7870	....	.....	....	37	314,168	8491	447	3,540,669	7921	595	4,771,641	8020
Dist. 4: Lower Gulf-S.W.	366	1,954,267	5340	....	.....	....	7	45,870	6553	373	2,000,137	5362	524	3,064,294	5848
Dist. 5: East Central	155	580,189	3743	....	.....	....	....	.....	....	155	580,189	3743	160	600,714	3754
Dist. 6: Northeast	177	989,632	5591	....	.....	....	2	10,647	5324	179	1,000,279	5588	198	1,128,561	5700
Dist. 7-B: North Central	935	3,137,536	3356	....	.....	....	2	3,232	1616	937	3,140,768	3352	1,181	3,969,226	3361
Dist. 7-C: West Central	350	1,711,054	4889	....	.....	....	3	10,235	3412	353	1,721,289	4876	452	2,286,241	5058
Dist. 8: West	368	2,274,123	6180	....	.....	....	2	20,710	10355	370	2,294,833	6202	572	4,009,627	7010
Dist. 9: North	777	2,547,866	3279	....	.....	....	4	14,971	3743	781	2,562,837	3281	985	3,503,935	3557
Dist. 10: Panhandle	58	344,953	5947	....	.....	....	....	.....	....	58	344,953	5947	83	515,774	6214
Utah	45	212,961	4732	....	.....	....	1	1,122	1122	46	214,083	4654	51	243,275	4770
West Virginia	3	11,344	3781	....	.....	....	....	.....	....	3	11,344	3781	3	11,344	3781
Washington	5	13,171	2634	....	.....	....	....	.....	....	5	13,171	2634	5	13,171	2634
Wyoming	217	1,114,268	5135	....	.....	....	....	.....	....	217	1,114,268	5135	299	1,644,218	5499
United States Total, 1954	9,368	42,273,787	4513	....	.....	....	180	1,086,155	6034	9,548	43,359,942	4541	11,983	57,606,207	4807
Earlier Years:															
1937	1,943	7,173,550	3692	....	.....	....	....	.....	....	1,943	7,173,550	3692	2,322	8,801,201	3790
1938	2,179	7,012,901	3218	....	.....	....	....	.....	....	2,179	7,012,901	3218	2,612	9,012,457	3450
1939	2,488	7,764,816	3121	....	.....	....	....	.....	....	2,488	7,764,816	3121	2,961	9,774,484	3301
1940	2,672	8,649,828	3237	....	.....	....	....	.....	....	2,672	8,649,828	3237	3,165	10,712,651	3386
1941	3,047	9,651,013	3167	....	.....	....	....	.....	....	3,047	9,651,013	3167	3,697	12,450,478	3368
1942	2,652	9,320,691	3515	....	.....	....	....	.....	....	2,652	9,320,691	3515	3,176	11,752,466	3702
1943	2,951	10,702,429	3627	....	.....	....	36	164,155	4560	2,987	10,866,584	3638	3,631	13,839,890	3812
1944	3,425	13,470,846	3933	22	141,039	6411	73	383,802	5258	3,520	13,995,687	3976	4,325	17,839,366	4125
1945	3,486	14,504,642	4161	39	284,441	7293	108	375,062	3473	3,633	15,164,145	4174	4,510	19,500,046	4324
1946	3,830	14,399,824	3760	38	274,592	7226	109	418,919	3843	3,977	15,093,335	3795	4,947	19,972,915	4037
1947	4,407	17,068,382	3873	59	330,897	5608	166	659,738	3974	4,632	18,059,017	3899	5,874	24,190,449	4118
1948	5,618	22,227,790	3957	23	127,597	5548	135	574,023	4252	5,776	22,929,410	3970	7,197	30,325,767	4214
1949	5,914	22,044,695	3728	46	183,003	3978	172	747,516	4346	6,132	22,975,214	3747	7,721	31,125,418	4031
1950	6,876	25,882,014	3764	41	153,029	3732	353	1,507,382	4270	7,270	27,542,425	3789	8,997	36,241,911	4028
1951	8,552	34,526,359	4037	40	217,136	5428	411	1,810,582	4405	9,003	36,554,077	4060	10,982	46,939,738	4274
1952	8,972	39,430,757	4395	37	198,906	5376	362	1,483,634	4098	9,371	41,113,297	4387	11,389	51,951,582	4562
1953	9,325	41,551,971	4456	21	107,494	5119	201	948,836	4721	9,547	42,608,301	4463	11,928	55,609,365	4662

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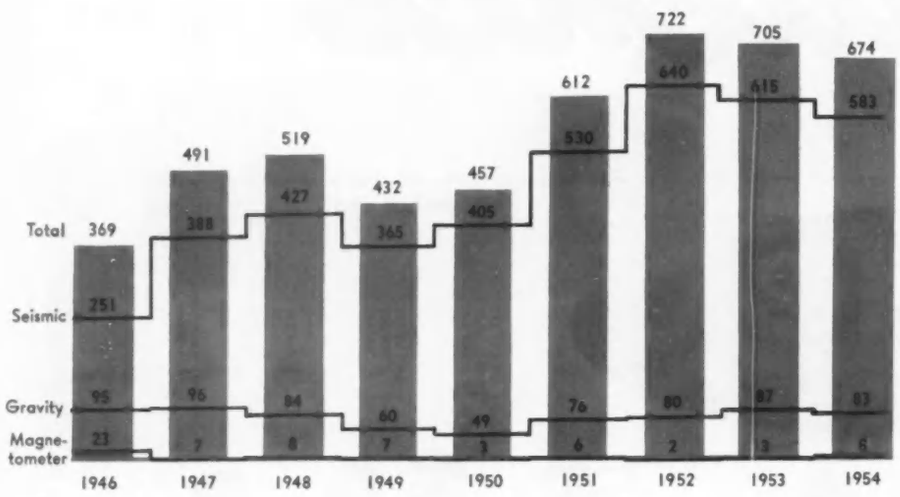

Geophysical Crews . . . Activity declines

6.8 percent. 700 crews busy at year's end.

By DON KLIEWER, World Oil Staff

Geophysical and core drilling work in the U. S. closed out 1954 on a marked downward trend. A year after a record 751 crews were operating at 1953's close, the total skidded to 700 for a drop of 6.8 percent. At the end of 1952, 741 crews were active.

However, the decline for the first half of 1954 as compared with the corresponding period of the previous year was not quite as precipitate. For the 1954 period an average of 728 crews were in the field; for the 1953 period 744 units were operating—a difference of 2.6 percent.

Peak period in the use of geophysical and core drilling crews developed at the close of June with 741 crews afield, 10 more than at the same period of the previous year.

But at the close of 1954, all phases of exploratory operations slowed down, except magnetometer surveys. This general slackening included a 43.5 percent decrease in core drill crews in operation, which totaled 26 at year's end as compared with 46 at the close of 1953 and 19 in 1952.

Magnetometer activity at the close of 1954 reflected an increase of five crews from the three active a year before and two at the end of 1952.

Seismic activity, which accounts for the bulk of geophysical surveys, reported a 5.2 percent dip from the previous year. At the close of 1954, 583 crews were in action—32 fewer than the 1953 total of 615. There were 640 crews operating at end of 1952.

A decline of 4.6 percent in gravity surveys resulted from a total of 83 crews operating at the close of 1954 as compared with 87 a year earlier.

Again, Texas and Louisiana were employing the services of almost half of the total number of geophysical and core drilling units in the field at the close of the year. Of the 346 crews operating at year's end, as compared with 360 busy in both states the previous year, Texas accounted for 222 and Louisiana 124. One hundred fifteen crews were reported in South Louisiana, while the northern section accounted for 9.

West Texas was the locale for 77 crews at the close of 1954, the largest single sector of Texas.

Only eight states among those in which geophysical crews were operating recorded any increase in activities. Activities in two—Illinois and Utah—remained unchanged from the previous year.

Nevada led at year's end in the number of increased crews in the field—as compared with the total in 1953—with 26, or 19 more than at the same time the previous year. Wyoming was second with an increase of 14 from the 1953 year-end total of 40.

Geophysical and Core Drilling Crews Operating at End of Year
(Source: Interstate Oil Compact Commission)

	GEOPHYSICAL CREWS								CORE DRILL CREWS		Total Geophysical and Core Drill	
	Seismic		Gravity		Magne-tometer		Total Geophysical					
STATE	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954
Alabama	9	3	....	1	....	....	9	4	7	4	16	8
Arkansas	5	2	2	1	1	1	8	4	2	2	10	6
California	18	14	4	2	....	....	22	16	....	....	22	16
Colorado	20	20	3	2	....	1	23	23	10	....	33	23
Florida	7	8	....	....	....	....	7	8	2	4	9	12
Georgia	....	....	....	....	....	....	....	....	....	1	....	1
Idaho	....	2	1	1	....	....	1	3	....	....	1	3
Illinois	2	3	1	1	1	....	4	4	....	....	4	4
Indiana	....	....	....	....	....	....	....	....	2	....	2	....
Kansas	12	10	1	....	....	....	13	10	3	1	16	11
Louisiana	100	109	18	15	....	....	118	124	....	....	118	124
N. Louisiana	6	9	....	....	....	....	6	9	....	....	6	9
S. Louisiana	94	100	18	15	....	....	112	115	....	....	112	115
Michigan	4	1	10	5	....	....	14	6	4	2	18	8
Mississippi	20	21	2	3	....	....	22	24	1	....	23	24
Montana	50	34	2	3	....	....	52	37	1	....	53	37
Nebraska	4	2	....	....	....	....	4	2	....	....	4	2
Nevada	2	15	1	7	....	2	3	24	4	2	7	26
New Mexico	45	35	4	5	....	....	49	40	1	....	50	40
North Dakota	28	22	....	....	....	....	28	22	....	....	28	22
Oklahoma	35	36	....	1	....	1	35	38	....	....	35	38
South Dakota	7	6	....	....	....	....	7	6	....	....	7	6
Texas	205	184	30	29	1	3	236	216	6	6	242	222
North Texas	18	13	1	....	....	....	19	13	1	1	20	14
East Texas	27	17	4	3	1	1	32	21	2	2	34	23
Southeast Texas	58	42	6	6	....	....	64	48	....	....	64	48
Southwest Texas	37	43	2	4	....	....	39	47	....	....	39	47
West Cent. Texas	5	9	4	2	....	1	9	12	3	1	12	13
West Texas	60	60	13	14	....	1	73	75	....	2	73	77
Utah	7	7	3	2	....	....	10	9	3	4	13	13
Wyoming	35	49	5	5	....	....	40	54	....	....	40	54
Total	615	583	87	83	3	8	705	674	46	26	751	700

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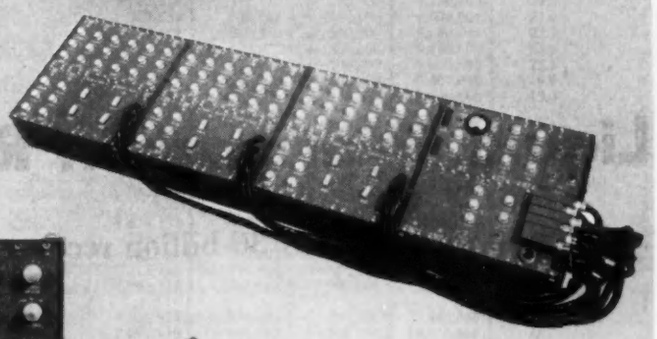
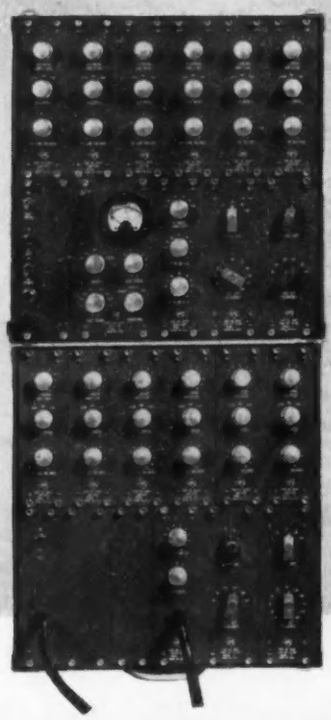


The HR Shallow Reflection System

FREQUENCY RESPONSE 30-500 CPS



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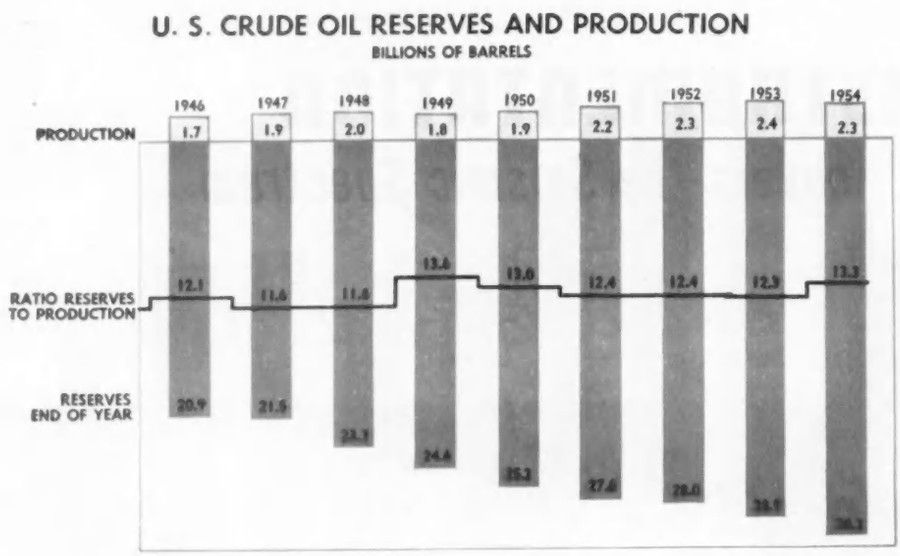


Liquid Hydrocarbon Reserves

. . . U. S. total exceeds 36 billion recoverable barrels.

ESTIMATED U. S. reserves of liquid hydrocarbons, including crude oil and natural gas liquids, reached a new high of 36.1 billion barrels at the end of 1954. Of this amount, crude oil reserves stood at 30.3 billion and recoverable natural gas liquids amounted to 5.8 billion barrels.

The amount of crude oil reserves proved up during the year was the highest since 1948. But the volume of new reserves of natural gas liquids developed during the year was just under the 1953 figure.

Last year was an exceptional year for the industry in many ways, and particularly in exploration and development activity. Although the production of crude oil was off slightly compared with the previous year, drilling activity and the number of oil well completions were the highest on record. And the quantity of recoverable crude oil reserves proved up during the year was the highest since 1948.

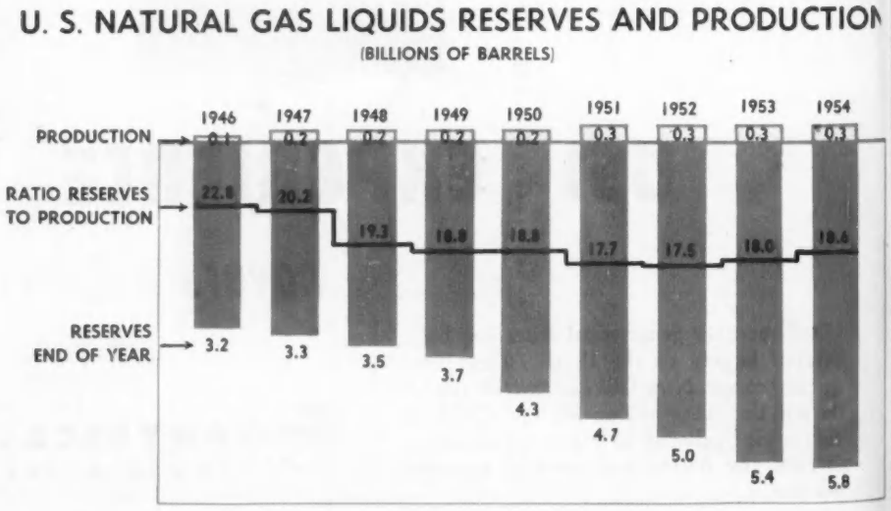
Fifty-four percent of all wells drilled in 1954 were completed as crude oil producers. This is exceptionally high for the industry. In addition, many of the wells were completed as gas-condensate or gas wells. This would indicate the proving up of large amounts of new reserves, and the records reveal just that. A total of 51,902 wells in all categories were drilled last year, out of which 28,141 of them were completed as oil producers. These oil wells included many which opened and began developing new fields and new pay horizons, and many that extended and added to the known reserves of previously established fields.

The industry did more than hold its own in the matter of new reserves discovered during the year. The trend in demand for crude oil is steadily going up over the years, and in order to maintain a high ratio of reserves to annual production, the industry must find about 1½ barrels of new oil for every barrel it produces. Last year, it did better than that. About 1.6 barrels of crude were proved up for each barrel produced.

Crude Oil. The amount of new crude oil reserves (exclusive of natural gas liquids) found during the year totaled 3.678 billion barrels, while the U. S. produced during the same period 2.276 billion barrels of crude (excluding lease condensate), The net gain in reserves was 1.392 billion barrels, or 41 percent more than the net gain in reserves of 0.984 billion barrels for 1953.

The ratio of total proved crude oil reserves to annual production stood at the end of 1954 at 13.3, highest since 1949. This ratio dropped from 13.6 in 1949 to 13.0 in 1950, and down to 12.4 the next year. It remained at this ratio for the following year, and began to rise again in 1953 when the ratio hit 12.5. The increase to 13.5 at the close of 1954 reflected not only the substantial increase in reserves but also the slight decrease in crude production in 1954.

Natural Gas Liquids. The situation in regard to natural gas liquids (which include condensate, natural gasoline and liquefied petroleum


U. S. NATURAL GAS LIQUIDS RESERVES AND PRODUCTION
(BILLIONS OF BARRELS)
1946 1947 1948 1949 1950 1951 1952 1953 1954
PRODUCTION
0.1 0.2 0.2 0.2 0.2 0.3 0.3 0.3 0.3
RATIO RESERVES TO PRODUCTION
22.6 20.2 19.3 18.8 18.8 17.7 17.5 18.0 18.6
RESERVES END OF YEAR
3.2 3.3 3.5 3.7 4.3 4.7 5.0 5.4 5.8

Estimated Proved Reserves of Crude Oil, Natural Gas Liquids, and Total Liquid Hydrocarbons in the United States, by Years

(Sources: Crude oil by American Petroleum Institute; natural gas liquids and total liquid hydrocarbons by API and American Gas Association. Reserves at end of 1936 and for subsequent years estimated by committees on reserves; earlier data estimated by API department of statistics but not based on geological surveys. Data for latest year estimated by WORLD OIL.)

(THOUSANDS OF BARRELS)

YEAR	Estimated Proved Reserves Beginning of Year	CHANGES IN RESERVES DURING YEAR: (ADDITION) RESERVES PROVED DURING YEAR: Revisions of Previous Estimates	Extensions to Old Pools	Total Revisions and Extensions (Col. 2+3)	New Pools Discovered During Year	Total Reserves Proved During Year (Cols. 4+5)	(Deduction) *Production During Year	(Net Change) Increase or Decrease (Col. 6—Col. 7)	Estimated Proved Reserves at End of Year (Col. 1+Col. 8)	Ratio of Year-End Reserves to Year's Prod. (Year's Supply) (Col. 9÷Col. 7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Crude Oil (Incl. Cycle Plant and Lease Condensate)										
1857-1899	0	.....	.....	.....	.....	†3,439,984	†939,984	††2,500,000	2,500,000	‡43.8
1900	2,500,000	.....	.....	.....	.....	463,621	63,621	+ 400,000	2,900,000	45.6
1901	2,900,000	.....	.....	.....	.....	169,389	69,389	+ 100,000	3,000,000	43.2
1902	3,000,000	.....	.....	.....	.....	288,767	88,767	+ 200,000	3,200,000	36.0
1903	3,200,000	.....	.....	.....	.....	300,461	100,461	+ 200,000	3,400,000	33.8
1904	3,400,000	.....	.....	.....	.....	317,081	117,081	+ 200,000	3,600,000	30.7
1905	3,600,000	.....	.....	.....	.....	334,717	134,717	+ 200,000	3,800,000	28.2
1906	3,800,000	.....	.....	.....	.....	126,494	126,494	.....	3,800,000	30.0
1907	3,800,000	.....	.....	.....	.....	266,095	166,095	+ 100,000	3,900,000	23.5
1908	3,900,000	.....	.....	.....	.....	278,527	178,527	+ 100,000	4,000,000	22.4
1909	4,000,000	.....	.....	.....	.....	383,171	183,171	+ 200,000	4,200,000	22.9
1910	4,200,000	.....	.....	.....	.....	509,557	209,557	+ 300,000	4,500,000	21.5
1911	4,500,000	.....	.....	.....	.....	720,449	220,449	+ 500,000	5,000,000	22.7
1912	5,000,000	.....	.....	.....	.....	622,935	222,935	+ 400,000	5,400,000	23.8
1913	5,400,000	.....	.....	.....	.....	348,466	284,466	+ 100,000	5,500,000	22.1
1914	5,500,000	.....	.....	.....	.....	165,763	265,763	— 100,000	5,400,000	19.9
1915	5,400,000	.....	.....	.....	.....	381,104	281,104	+ 100,000	5,500,000	19.6
1916	5,500,000	.....	.....	.....	.....	700,767	300,767	+ 400,000	5,900,000	19.6
1917	5,900,000	.....	.....	.....	.....	335,316	335,316	.....	5,900,000	17.6
1918	5,900,000	.....	.....	.....	.....	655,928	355,928	+ 300,000	6,200,000	17.4
1919	6,200,000	.....	.....	.....	.....	878,367	378,367	+ 500,000	6,700,000	17.7
1920	6,700,000	.....	.....	.....	.....	942,929	442,929	+ 500,000	7,200,000	16.3
1921	7,200,000	.....	.....	.....	.....	1,072,183	472,183	+ 600,000	7,800,000	16.5
1922	7,800,000	.....	.....	.....	.....	357,531	557,531	— 200,000	7,600,000	13.6
1923	7,600,000	.....	.....	.....	.....	732,407	732,407	.....	7,600,000	10.4
1924	7,600,000	.....	.....	.....	.....	613,940	713,940	— 100,000	7,500,000	10.5
1925	7,500,000	.....	.....	.....	.....	1,763,743	763,743	+1,000,000	8,500,000	11.1
1926	8,500,000	.....	.....	.....	.....	1,070,874	770,874	+ 300,000	8,800,000	11.4
1927	8,800,000	.....	.....	.....	.....	2,601,129	901,129	+1,700,000	10,500,000	11.7
1928	10,500,000	.....	.....	.....	.....	1,401,474	901,474	+ 500,000	11,000,000	12.2
1929	11,000,000	.....	.....	.....	.....	3,207,323	1,007,323	+2,200,000	13,200,000	13.1
1930	13,200,000	.....	.....	.....	.....	1,298,011	898,011	+ 400,000	13,600,000	15.1
1931	13,600,000	.....	.....	.....	.....	251,081	851,081	— 600,000	13,000,000	15.3
1932	13,000,000	.....	.....	.....	.....	85,159	785,159	— 700,000	12,300,000	15.7
1933	12,300,000	.....	.....	.....	.....	605,656	905,656	— 300,000	12,000,000	13.3
1934	12,000,000	.....	.....	.....	.....	1,085,065	908,065	+ 177,000	12,177,000	13.4
1935	12,177,000	.....	.....	.....	.....	1,219,596	996,596	+ 233,000	12,400,000	12.4
1936	12,400,000	.....	.....	.....	.....	1,763,087	1,099,687	+ 663,400	13,063,400	11.9
1937	13,063,400	.....	.....	2,792,790	928,742	3,721,532	1,277,664	+2,433,868	15,507,268	12.1
1938	15,507,268	.....	.....	2,243,571	810,493	3,054,064	1,213,186	+1,840,878	17,348,146	14.3
1939	17,348,146	.....	.....	2,058,455	340,667	2,399,122	1,264,256	+1,134,866	18,483,012	14.6
1940	18,483,012	.....	.....	1,607,012	286,338	1,893,350	1,351,847	+ 541,503	19,024,515	14.1
1941	19,024,515	.....	.....	1,538,989	429,974	1,968,963	1,404,182	+ 564,781	19,589,296	13.9
1942	19,589,296	.....	.....	1,618,925	260,051	1,878,976	1,385,479	+ 493,497	20,082,793	14.5
1943	20,082,793	.....	.....	1,202,368	282,418	1,484,786	1,503,427	— 18,641	20,064,152	13.3
1944	20,064,152	.....	.....	1,556,192	511,308	2,067,500	1,678,421	+ 389,079	20,453,231	12.2
1945	20,453,231	+ 248,891	1,441,424	1,690,315	419,984	2,110,299	1,736,717	+ 373,582	20,826,813	12.0
Crude Oil Only:										
1945	19,784,530	.....	.....	.....	.....	1,870,971	1,713,655	+ 157,316	19,941,846	11.6
1946	19,941,846	+1,254,705	1,158,923	2,413,628	244,434	2,658,062	1,726,348	+ 931,714	20,873,560	12.1
1947	20,873,560	+ 749,278	1,269,862	2,019,140	445,430	2,464,570	1,850,445	+ 614,125	21,487,685	11.6
1948	21,487,685	+1,958,853	1,439,873	3,398,726	396,481	3,795,207	2,002,448	+1,792,759	23,280,444	11.6
1949	23,280,444	+ 603,566	1,693,862	2,297,428	890,417	3,187,845	1,818,800	+1,369,045	24,649,489	13.6
1950	24,649,489	+ 663,378	1,334,391	1,997,769	564,916	2,562,685	1,943,776	+ 618,909	25,268,398	13.0
1951	25,268,328	+1,776,110	2,248,588	4,024,698	389,256	4,413,954	2,214,321	+2,199,633	27,468,031	12.4
1952	27,468,031	+ 743,729	1,509,131	2,252,860	496,428	2,749,288	2,256,765	+ 492,523	27,960,554	12.4
1953	27,960,554	+1,264,832	1,439,618	2,704,450	591,680	3,296,130	2,311,856	+ 984,274	28,944,828	12.5
1954	28,944,828	.....	.....	.....	.....	3,668,150	2,275,705	+1,392,445	30,337,273	13.3
Natural Gas Liquids:										
1946	.....	.....	.....	.....	.....	.....	.....	.....	3,163,219	.....
1947	3,163,219	.....	.....	192,237	59,301	251,538	160,782	+ 90,756	3,253,975	20.2
1948	3,253,975	.....	.....	405,874	64,683	470,557	183,749	+ 286,808	3,540,783	19.3
1949	3,540,783	.....	.....	294,211	92,565	386,776	198,547	+ 188,229	3,729,012	18.8
1950	3,729,012	.....	.....	707,879	58,183	766,062	227,411	+ 538,651	4,267,663	18.8
1951	4,267,663	.....	.....	648,497	75,494	723,991	267,052	+ 456,939	4,724,602	17.7
1952	4,724,602	.....	.....	475,170	81,668	556,838	284,789	+ 272,049	4,996,651	17.5
1953	4,996,651	.....	.....	648,047	95,922	743,969	302,698	+ 441,271	5,437,922	18.0
§1954	5,437,922	.....	.....	.....	.....	661,650	311,308	+ 350,342	5,788,264	18.6
Total Liquid Hydrocarbons:										
1946	.....	.....	.....	.....	.....	.....	.....	.....	24,036,779	.....
1947	24,036,779	.....	.....	2,211,377	564,731	2,716,108	2,011,227	+ 704,881	24,741,660	12.3
1948	24,741,660	.....	.....	3,804,600	461,164	4,265,764	2,186,197	+2,079,567	26,821,227	12.3
1949	26,821,227	.....	.....	2,591,639	982,982	3,574,621	2,017,347	+1,557,274	28,378,501	14.1
1950	28,378,501	.....	.....	2,705,648	623,099	3,328,747	2,171,187	+1,157,560	29,536,061	13.6
1951	29,536,061	.....	.....	4,673,195	464,750	5,137,945	2,481,373	+2,656,572	32,192,633	13.0
1952	32,192,633	.....	.....	2,728,030	578,096	3,306,126	2,541,554	+ 764,572	32,957,205	13.0
1953	32,957,205	.....	.....	3,352,497	687,602	4,040,099	2,614,554	+1,425,545	34,382,750	13.2
§1954	34,382,750	.....	.....	.....	.....	4,329,800	2,587,013	+1,742,787	36,125,537	14.0

* Production for 1936 and previous years from U. S. Bureau of Mines: production for 1937 and each subsequent year compiled by API (and AGA) committees on basis of 11 months actual and December estimated. Small variance of these figures from actual production as later reported is compensated by revision when reserves report for succeeding year is compiled.

† During years 1857-1899. ‡ Based on production of 57,071 thousand barrels in 1899. § Estimated by WORLD OIL. ‡ Crude oil only, not including 33,557 lease condensate fed into pipe lines with crude oil. ✦ Includes 242,363 plant production of natural gasoline, etc; 33,557 lease condensate; estimated 31,500 losses and waste.

Estimated Proved Reserves of Crude Oil, Natural Gas Liquids, and Total Liquid Hydrocarbons in U. S., by States, in 1954

Reserves Jan. 1, 1954, from API; changes in 1954 and reserves at end of 1954 estimated by WORLD OIL

THOUSANDS OF BARRELS

STATE	Reserves Jan. 1, 1954	Changes in Reserves in 1954 (Add) Reserves Proved	(Deduct) Production	Net Change	Reserves Dec. 31, 1954	Ratio of Reserves to Prod.
Crude Oil	**28,944,828**	**3,668,150**	**2,275,705**	**+1,392,445**	**30,337,273**	**13.3**
Alabama	**17,160**	800	1,573	—773	**16,387**	10.4
Arkansas	**358,231**	63,800	28,634	+35,166	**393,397**	13.7
California	**3,919,379**	400,200	356,120	+44,080	**3,963,459**	11.1
Colorado	**319,254**	73,500	42,136	+31,364	**350,618**	8.3
Illinois	**624,803**	152,000	66,469	+85,531	**710,334**	10.7
Indiana	**62,128**	8,600	11,109	—2,509	**59,619**	5.4
Kansas	**913,341**	181,750	118,843	+62,907	**976,248**	8.2
Kentucky	**81,655**	10,650	13,755	—3,105	**78,550**	5.7
Louisiana	**2,759,655**	537,450	228,951	+308,499	**3,068,154**	13.4
Michigan	**60,721**	10,850	12,001	—1,151	**59,570**	5.0
Mississippi	**350,101**	29,200	32,351	—3,151	**346,950**	10.7
Montana	**208,985**	61,550	13,464	+48,086	**257,071**	19.1
Nebraska	**25,621**	18,450	7,380	+11,070	**36,691**	5.0
New Mexico	**814,902**	154,250	74,133	+80,117	**895,019**	12.1
New York	**49,083**	3,200	3,408	—208	**48,875**	14.3
North Dakota	**128,271**	58,800	5,858	+52,942	**181,213**	30.9
Ohio	**31,826**	4,750	3,825	+925	**32,751**	8.6
Oklahoma	**1,752,228**	431,800	186,423	+245,377	**1,997,605**	10.7
Pennsylvania	**111,083**	3,250	8,934	—5,684	**105,399**	11.8
Texas	**14,998,620**	1,132,500	961,798	+170,702	**15,169,322**	15.8
Utah	**37,937**	2,000	1,887	+113	**38,050**	20.2
West Virginia	**36,612**	2,000	2,894	—894	**35,718**	12.3
Wyoming	**1,279,110**	325,800	93,041	+232,759	**1,511,869**	16.2
*Miscellaneous	**4,122**	1,000	718	+282	**4,404**	6.1
Nat. Gas Liqs.	**5,437,922**	**661,650**	**311,308**	**+350,342**	**5,788,264**	**18.6**
Arkansas	**49,585**	1,550	3,065	—1,515	**48,070**	15.7
California	**324,866**	26,350	30,670	—4,320	**320,546**	10.5
Colorado	**10,689**	.....	750	—750	**9,939**	13.3
Illinois	**17,043**	150	3,500	—3,350	**13,693**	3.9
Indiana	**145**	25	50	—25	**120**	2.4
Kansas	**177,728**	15,000	5,049	+9,951	**187,679**	37.2
Kentucky	**7,776**	450	1,850	—1,400	**6,376**	3.4
Louisiana	**813,214**	135,350	46,740	+88,610	**901,824**	19.3
Michigan	**641**	75	75	.....	**641**	8.5
Mississippi	**54,734**	6,200	2,512	+3,688	**58,422**	23.3
Montana	**2,908**	.....	250	—250	**2,658**	10.6
Nebraska	**3,034**	850	250	+600	**3,634**	14.5
New Mexico	**320,657**	53,800	12,267	+41,533	**362,190**	29.5
Ohio	**1,359**	50	22	+28	**1,387**	63.0
Oklahoma	**304,232**	48,100	28,487	+19,613	**323,845**	11.4
Pennsylvania	**2,768**	125	150	—25	**2,743**	18.3
Texas	**3,267,242**	362,300	167,087	+195,213	**3,462,455**	20.7
Utah	**53**	.....	25	—25	**28**	1.1
West Virginia	**28,213**	1,050	5,612	—4,562	**23,651**	4.2
Wyoming	**50,559**	10,150	2,892	+7,258	**57,817**	20.0
*Miscellaneous	**476**	75	5	+70	**546**	109.2
Total Liq. Hyd.	**34,382,750**	**4,329,800**	**2,587,013**	**+1,742,787**	**36,125,537**	**14.0**
Alabama	**17,160**	800	1,573	—773	**16,387**	10.4
Arkansas	**407,816**	65,350	31,699	+33,651	**441,467**	13.9
California	**4,244,245**	426,550	386,790	+39,760	**4,284,005**	11.1
Colorado	**329,943**	73,500	42,886	+30,614	**360,557**	8.4
Illinois	**641,846**	152,150	69,969	+82,181	**724,027**	10.3
Indiana	**62,273**	8,625	11,159	—2,534	**59,739**	5.4
Kansas	**1,091,069**	196,750	123,892	+72,858	**1,163,927**	9.4
Kentucky	**89,431**	11,100	15,605	—4,505	**84,926**	5.4
Louisiana	**3,572,869**	672,800	275,691	+397,109	**3,969,978**	14.4
Michigan	**61,362**	10,925	12,076	—1,151	**60,211**	5.0
Mississippi	**404,835**	35,400	34,863	+537	**405,372**	11.6
Montana	**211,893**	61,550	13,714	+47,836	**259,729**	18.9
Nebraska	**28,655**	19,300	7,630	+11,670	**40,325**	5.3
New Mexico	**1,135,559**	208,050	86,400	+121,650	**1,257,209**	14.6
New York	**49,083**	3,200	3,408	—208	**48,875**	14.3
North Dakota	**128,271**	58,800	5,858	+52,942	**181,213**	30.9
Ohio	**33,185**	4,800	3,847	+953	**34,138**	8.9
Oklahoma	**2,056,460**	479,900	214,910	+264,990	**2,321,450**	10.8
Pennsylvania	**113,851**	3,375	9,084	—5,709	**108,142**	11.9
Texas	**18,265,862**	1,494,800	1,128,885	+365,915	**18,631,777**	16.5
Utah	**37,990**	2,000	1,912	+88	**38,078**	19.9
West Virginia	**64,825**	3,050	8,506	—5,456	**59,369**	7.0
Wyoming	**1,329,669**	335,950	95,933	+240,017	**1,569,686**	16.4
*Miscellaneous	**4,598**	1,075	723	+352	**4,950**	6.8

* Miscellaneous includes: Crude in Florida, Missouri, Nevada, South Dakota, Tennessee, Virginia; Natural Gas Liquids in Alabama, Florida, North Dakota.

gases) remains good, although 1954 results were not as impressive as those of the preceding year. During last year, the industry proved up 662 million barrels of natural gas liquids, as compared with 744 million barrels the previous year. The net gain for 1953 was 441 million barrels and in 1954 it was 350 million barrels. However, the total recoverable proved natural gas liquid reserves at the end of 1954 stood at 5.788 billion barrels, compared with a total of 5.438 billion barrels for the end of the previous year. The ratio of total proved reserves of natural gas liquids to annual production was 18.6 at the end of last year. That was a gain over the ratio of 18.0 for the close of 1953.

Total Liquid Hydrocarbons. Combining these two sources of liquid hydrocarbons (crude oil and natural gas liquids) the U. S. is in good shape. With total recoverable reserves at 36.125 billion barrels and annual production for last year at 2.587 billion barrels, the ratio of reserves to production is 14.0, the highest since 1949, when the over-all ratio was 14.1.

More than one-third of all the new crude oil discovered in the U. S. was found in Texas, where 1.132 billion barrels of crude reserves were proved up. Texas holds half the U. S. total crude reserves, with a year end total of 15.169 billion barrels. This figure does not give full weight to the amount of additional oil to be recovered ultimately by secondary recovery and pressure maintenance. For example, in the Kelly-Snyder field (covering most of Scurry County in West Texas), unitization permitted one of the nation's largest pressure maintenance projects to get underway in 1954. Best engineering estimates indicate that the operation will result in the ultimate recovery of about 800 million barrels more oil than would have been recovered by primary means.

Undoubtedly, when this project is further along, more weight will be given to this prospective increase when figuring total proved recoverable crude oil reserves. This project, although the largest, is but one of many operations started in 1954 to increase ultimate recovery (and also to increase the nation's proved recoverable crude reserves).

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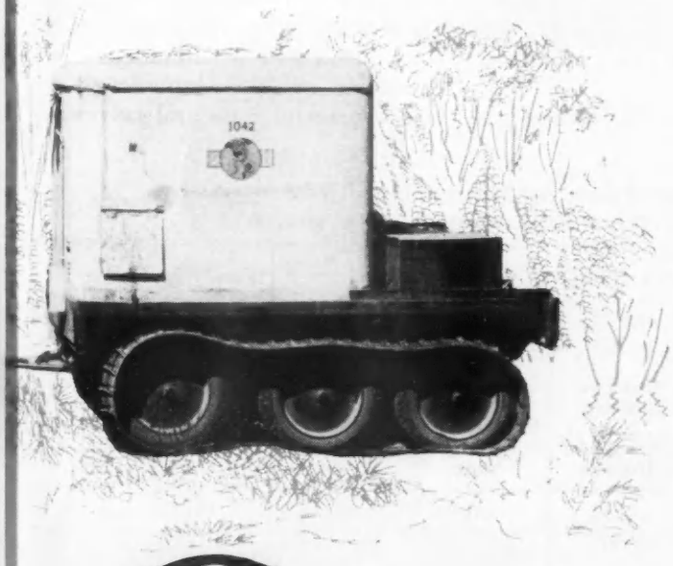

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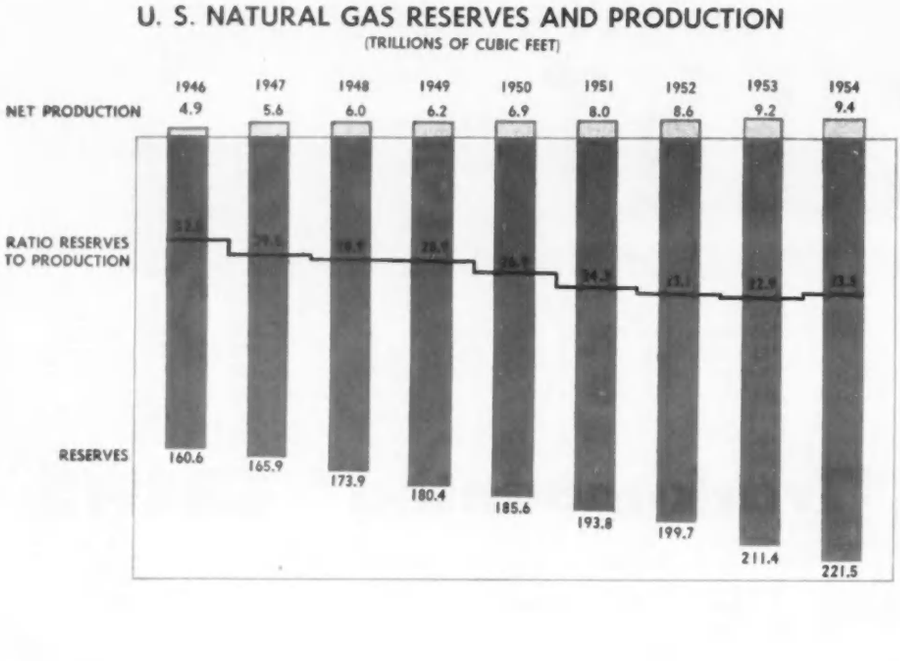

U. S. NATURAL GAS RESERVES AND PRODUCTION
(TRILLIONS OF CUBIC FEET)
1946 1947 1948 1949 1950 1951 1952 1953 1954
NET PRODUCTION
4.9 5.6 6.0 6.2 6.9 8.0 8.6 9.2 9.4
RATIO RESERVES TO PRODUCTION
RESERVES
160.6 165.9 173.9 180.4 185.6 193.8 199.7 211.4 221.5

Natural Gas Reserves . . . New discoveries continue to exceed production during 1954.

ALTHOUGH CONFRONTED with an ever increasing consumption rate, the industry has been able to find more natural gas than is being produced. This result has been achieved consistently by the industry for a number of years, and is also being accomplished in most gas producing states.

The net gain in U. S. natural gas reserves in 1954 amounted to 10.1 trillion cubic feet, bringing the total at the year's end to 221.5 trillion . . . enough natural gas to last 23½ years at the present rate of consumption. During the year, 19.1 trillion cubic feet of recoverable gas was discovered and for the same period, the U. S. produced 9.4 trillion cubic feet. Approximately 400 billion cubic feet were placed in storage. These changes resulted in a net gain in reserves of 10.1 trillion cubic feet.

The discovery rate in the U. S. during 1954 was slightly under that of the previous year, when 20.5 trillion cubic feet were found. For 1953, the net gain in natural gas reserves amounted to 11.7 trillion cubic feet, highest since 1946. At the beginning of 1954, the U. S. had a total of 211.4 trillion cubic feet of natural gas reserves.

Texas still leads. Texas continues to lead the U. S. in recoverable natural gas reserves, with a total of 109.2 trillion cubic feet, or about half the country's total. During the past year, 39 percent of the U. S. total or 7.5 trillion cubic feet of new gas reserves were discovered in Texas.

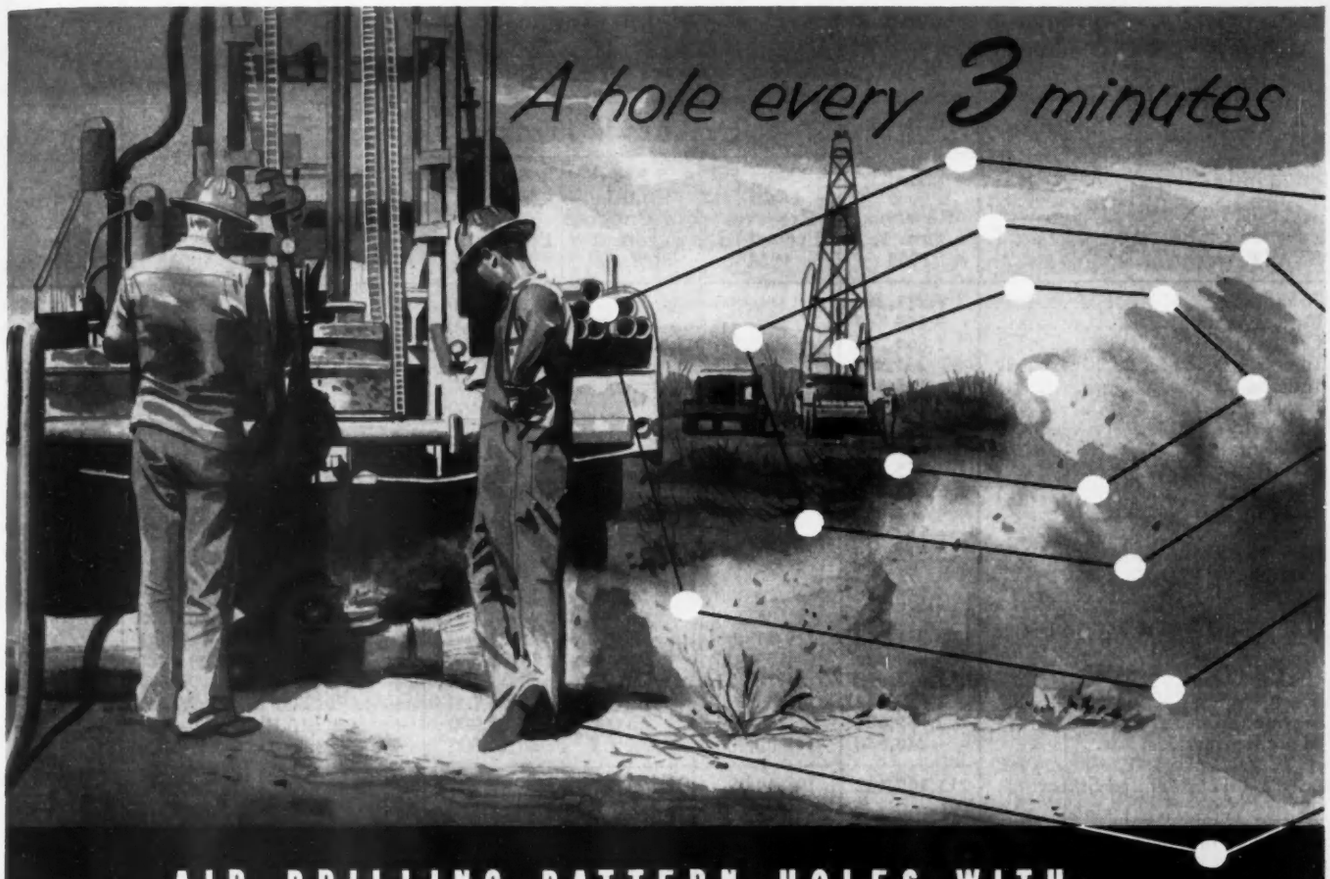
Second was Louisiana, which accounted for 4.6 trillion cubic feet of new gas reserves discovered in 1954. Louisiana also was second in natural gas reserves held, with a total at the end of 1954 of 37.7 trillion cubic feet. Louisiana in 1954 experienced the largest net gain in natural gas reserves

Changes in U. S. Reserves of Natural Gas, by Years, Since 1945

Sources: AGA except 1954 estimated by WORLD OIL . . . Data in millions of cubic feet, 14.65 psi at 60° F.

YEAR	Estimated Proved Reserves Beginning of Year	CHANGES IN RESERVES DURING YEAR (Add.) Reserves Proved: Extensions and Revisions	Discoveries of New Fields and New Pools in Old Fields	Total Reserves Proved During Year (Cols. 2+3)	(Add or Deduct) Net Change in Storage	(Deduct) Net Production During Year	(Net Change) Increase or Decrease (Cols. 4+5—6)	Estimated Proved Reserves End of Year (Cols. 1+7)	Ratio of Year-End Reserves to Year's Prod. (Year's Supply) Col. 8÷ Col. 6
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1945	.....	.....	.....	.....	.....	.....	.....	**147,789,367**	....
1946	**147,789,367**	.....	.....	17,729,152	*	4,942,617	+12,786,535	**160,575,901**	32.5
1947	**160,575,901**	7,570,654	3,410,170	10,980,824	*	5,629,811	+ 5,351,013	**165,926,914**	29.5
1948	**165,926,914**	9,769,483	4,129,089	13,898,572	+ 51,482	6,007,628	+ 7,942,426	**173,869,340**	28.9
1949	**173,869,340**	8,061,429	4,612,870	12,674,299	+ 82,746	6,245,041	+ 6,512,004	**180,381,344**	28.9
1950	**180,381,344**	9,172,381	2,877,351	12,049,732	+ 54,301	6,892,678	+ 5,211,355	**185,592,699**	26.9
1951	**185,592,699**	13,013,606	3,039,385	16,052,991	+ 132,751	7,966,941	+ 8,218,801	**193,811,500**	24.3
1952	**193,811,500**	8,934,470	5,411,043	14,345,513	+ 198,850	8,639,638	+ 5,904,725	**199,716,225**	23.1
1953	**199,716,225**	13,371,355	7,081,661	20,453,016	+ 516,431	9,238,540	+11,730,907	**211,447,132**	22.9
1954†	**211,447,132**	.....	.....	19,140,000	+ 400,000	9,439,300	+10,100,700	**221,547,832**	23.5

* Not Estimated. † Estimated by WORLD OIL.



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Changes in Proved Reserves of Natural Gas in U. S. in 1954, by States

Reserves Jan. 1, 1954, from AGA; changes in 1954 and reserves Dec. 31, 1954, estimated by WORLD OIL.
(Millions of Cubic Feet—14.65 psia, at 60 Deg. F.)

STATE	Reserves Jan. 1, 1954	CHANGES IN RESERVES IN 1954				Reserves Dec. 31, 1954	Ratio Reserves to Production
		(Add) Reserves Proved in 1954	Net Change in Underground Storage[1]	(Deduct) Net Production in 1954[2]	Net Change (Increase or Decrease)		
Arkansas	**1,211,266**	150,000	.....	36,700	+ 113,300	**1,324,566**	36.1
California	**9,159,347**	264,000	25,000	492,100	— 203,100	**8,956,247**	18.2
Colorado	**1,864,275**	222,000	.....	59,800	+ 162,200	**2,026,475**	33.9
Illinois	**231,251**	54,000	.....	29,100	+ 24,900	**256,151**	8.8
Indiana	**35,830**	6,000	5,000	5,700	+ 5,300	**41,130**	7.2
Kansas	**15,787,602**	775,000	10,000	439,400	+ 345,600	**16,133,202**	36.7
Kentucky	**1,301,533**	56,000	.....	68,600	— 12,600	**1,288,933**	18.8
Louisiana	**34,458,912**	4,645,000	.....	1,403,800	+ 3,241,200	**37,700,112**	26.9
Michigan	**275,519**	26,000	150,000	6,700	+ 169,300	**444,819**	66.4
Mississippi	**2,569,181**	212,000	.....	179,000	+ 33,000	**2,602,181**	14.5
Montana	**764,000**	27,000	20,000	34,000	+ 13 000	**777,000**	22.9
Nebraska	**182,110**	85,000	.....	12,200	+ 72,800	**254,910**	20.9
New Mexico	**17,522,210**	2,925,000	10,000	505,200	+ 2,429,800	**19,952,010**	39.5
New York	**71,004**	2,000	5,000	2,300	+ 4,700	**75,704**	32.9
Ohio	**755,982**	72,000	50,000	39,900	+ 82,100	**838,082**	21.0
Oklahoma	**12,228,373**	1,506,000	20,000	886,900	+ 639,100	**12,867,473**	14.5
Pennsylvania	**751,844**	51,000	50,000	151,700	— 50,700	**701,144**	4.6
Texas	**106,529,626**	7,475,000	.....	4,800,500	+ 2,674,500	**109,204,126**	22.7
Utah	**1,113,058**	73,000	.....	11,500	+ 61,500	**1,174,558**	102.1
West Virginia	**1,653,942**	139,000	50,000	169,700	+ 19,300	**1,673,242**	9.9
Wyoming	**2,739,631**	310,000	5,000	92,900	+ 222,100	**2,961,731**	31.9
Miscellaneous[3]	**240,636**	65,000	.....	11,600	+ 53,400	**294,036**	25.3
Total United States	**211,447,132**	19,140,000	400,000	9,439,300	+ 10,100,700	**221,547,832**	23.5

[1] Net difference between gas stored in and gas withdrawn from underground storage reservoirs.
[2] Net production equals gross withdrawals less gas injected into underground reservoirs.
[3] Includes Alabama, Florida, Maryland, Missouri, North Dakota, South Dakota, Tennessee, and Virginia.

of any state in the U. S. In spite of being the nation's second largest natural gas produced (Texas leads), Louisiana experienced the largest net gain in gas reserves during last year. Figures indicate that the net gain, after subtracting yearly production from new reserves discovered during the year, amounted to 3.2 trillion cubic feet. Texas' net gain was only 2.7 trillion cubic feet.

New Mexico in 1954 continued third among the states in natural gas reserves proved up and in gas reserves held. About 2.9 trillion cubic feet of new reserves were proved up, while 0.5 trillion were produced, leaving a net addition of 2.4 trillion, to push the state's total of reserves held to 19.9 trillion feet.

Kansas remains fourth in reserves held, with a present total of 16.1 trillion cubic feet; and Oklahoma is fifth, with 12.9 trillion.

The five leading gas producing states, Texas, Louisiana, New Mexico, Kansas and Oklahoma, accounted for 195.9 trillion cubic feet of reserves at the end of 1954, or 88.4 percent of the national total.

California ranks sixth, having had about 9.0 trillion cubic feet of reserves at the end of 1954.

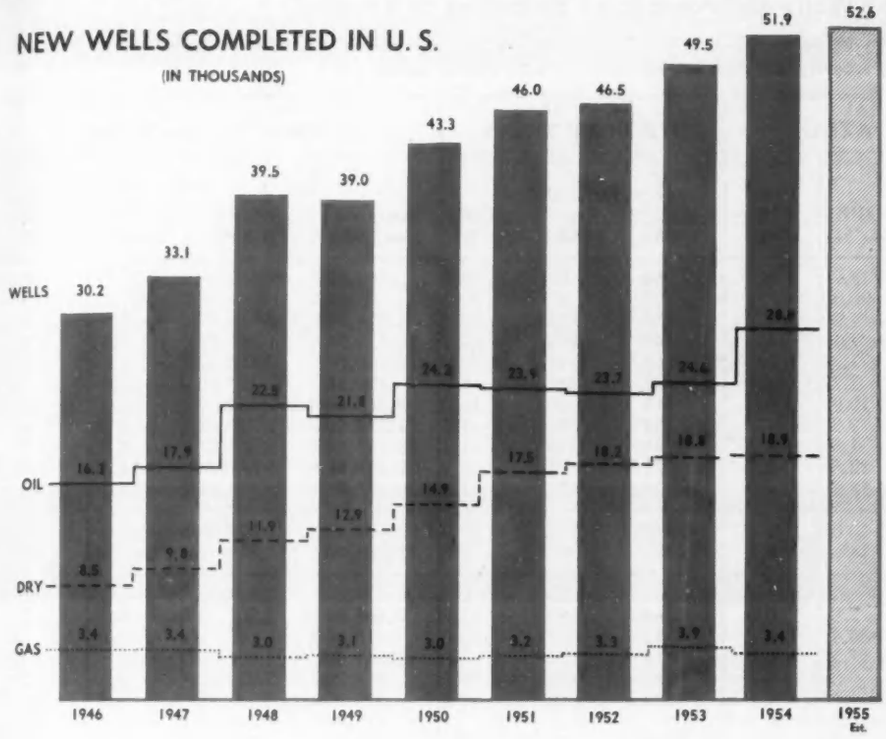
Consumption of natural gas in large transmission lines continues to grow rapidly, and the picture for 1955 is one of accelerated use of gas. Unless the U. S. Congress clarifies the FPC's authority in the gas producing industry, however, the rate of growth of U. S. gas reserves may be seriously slowed down. Even the comparison between 1954 figures with those of 1953 indicates a slight downward trend in discoveries, despite accelerated drilling activity.

Estimates of Proved Reserves of Natural Gas in U. S., by Years, Since 1918

(Reserves estimates from sources shown; production from Bureau of Mines.)

YEAR	Reserves End of Year (Billion Cubic Feet)	Authority for Estimate of Reserves	Net Production (Billion Cubic Feet)	Ratio Reserve to Annual Prod.
1918	15,000	E. Holley Poe[1]	721	20.8
1919	15,000	" "	746	20.1
1920	15,000	" "	798	18.8
1921	15,000	" "	662	22.7
1922	15,000	" "	763	19.7
1923	15,000	" "	1,007	14.9
1924	15,000	" "	1,142	13.1
1925	23,000	*Gas Facts*[2]	1,189	19.3
1926	23,000	" "	1,313	17.5
1927	23,000	" "	1,445	15.9
1928	23,000	" "	1,568	14.7
1929	23,000	" "	1,918	12.0
1930	46,000	Earl P. Hines[3]	1,943	23.7
1931	46,000	" "	1,686	27.3
1932	46,000	" "	1,556	29.6
1933	46,000	" "	1,555	29.6
1934	62,000	Ralph E. Davis[4]	1,771	35.0
1935	62,000	" "	2,408	25.7
1936	62,000	" "	2,571	24.1
1937	66,000	" "	2,854	23.1
1938	70,000	Lyon F. Terry[5]	2,960	23.6
1939	70,000	" "	3,162	22.1
1940	85,000	Ralph E. Davis[4]	3,331	25.5
1941	113,800	P.A.W.[6]	3,459	32.9
1942	110,000	"	3,701	29.7
1943	110,000	"	4,336	25.4
1944	133,500	"	4,731	28.2
1945	147,789	A.G.A.[7]	4,840	30.5
1946	160,576	"	4,943	32.5
1947	165,927	"	5,630	29.5
1948	173,869	"	6,008	28.9
1949	180,381	"	6,245	28.9
1950	185,593	"	6,893	26.9
1951	193,811	A.G.A.[7]	7,967	24.3
1952	199,716	"	8,640	23.1
1953	211,447	A.G.A.[7]	9,239	22.9
1954	221,548	*World Oil*	9,439	23.5

[1] And Associates, New York, in report September 23, 1947. [2] American Gas Association yearbook, 1945 and 1946
[3] Then with Cities Service Co., New York. [4] Consulting engineer, Houston. [5] Of Chase National Bank, New York
[6] Petroleum Administration for War. [7] American Gas Association.



Drilling Forecast . . . Well completions

and footage drilled expected to be at all-time high.

By **WARREN L. BAKER,** Editor, and
CECIL W. SMITH, Statistical Editor

DRILLING ACTIVITY in the U. S. during 1955 is expected to surpass the surprisingly high level attained in 1954. WORLD OIL's annual forecast is for the completion of an all-time high of 52,612 wells and the drilling of 214⅔ million feet of hole in completing these wells during 1955.

This prediction calls for the completion of 1.4 percent or 710 more wells than in 1954, and the drilling of 2.4 percent or 5.1 million more feet of hole than in 1954.

Big gain in recent years. While the drilling of 52,612 wells and 214⅔ million feet of hole in 1955 would represent only a modest increase over 1954 volumes, it would far surpass all other preceding years by very substantial margins.

It was not until 1950 that more than 40,000 wells were completed in the U. S. in any one year. Now, in excess of 50,000 wells are being drilled annually. Footage has increased even more rapidly, as a larger portion of the wells have been located in deeper producing regions.

The 1955 forecast is for 3132 more wells and 16 million more feet of hole than in 1953, for 6616 more wells and 37 million more footage than in 1951, and for 9305 more wells and 54 million more footage than in 1950. The footage expected to be drilled in 1955 is double the volume drilled as recently as 1946, when only 101 million feet of hole were drilled.

To find enough new oil supply to satisfy future constantly growing consumption, wildcat drilling is expected to attain a new peak in 1955. WORLD OIL forecasts the completion of 10,976 wildcat tests in 1955, in contrast with 10,815 during 1954, against 10,675 in 1953, and 10,241 during 1952.

More drilling for Texas. Increased U. S. drilling in 1955 will be the result of greater activity in Texas, Louisiana and Illinois, plus smaller gains in several other states.

Biggest gain is expected to take place in Texas, where a total of 18,995 wells is forecast for 1955. This compares with 18,539 wells completed during 1954, and 17,091 in 1953. Footage in Texas is expected to increase by 2½ million feet over 1954 rates, rising to an estimated 84¾ million feet.

This volume would mean that 36.1 percent of all the wells drilled in the U. S. will be located in Texas during 1955, and that 39.6 percent of the country's footage will be drilled in Texas.

Higher drilling rates are forecast for the Upper Texas Gulf Coast, West Texas, East Texas and South Central Texas districts. Minor decreases are anticipated in the Middle Gulf Coast, Lower Gulf Coast, North Texas, and Panhandle districts.

The forecast for Louisiana calls for the drilling of 4130 wells against 3650 in 1954 and 2733 in 1953. Footage in the state is expected to rise 3½ million feet to 26 million feet. Both North and South Louisiana districts are seen as experiencing increased drilling in 1955.

Texas and Louisiana combined are expected to account for half of the wells and footage drilled in the U. S. during 1955.

Illinois' drilling is expected to reach 3620 wells, up 355 from 1955 and 1456 more than in 1953. Activity in Illinois has been encouraged by the success of sand-fracturing operations.

Small increases in drilling are expected to take place in Alabama, Indiana, Kansas, Michigan, Mississippi, Missouri, Montana, New Mexico, Ohio, Utah and West Virginia.

On the other hand, decreased drilling is predicted for several states. Largest declines are foreseen for California, Oklahoma, Colorado, Kentucky and Pennsylvania. Decreases in these states range from 104 to 209 fewer wells than in 1954. Arizona, Arkansas, Florida, Nebraska and Wyoming also are expected to show less drilling, but on a smaller scale.

Details on the 1955 forecast are given in an accompanying table. It shows total new wells, wildcat wells, and footage to be drilled by states, together with a comparison of 1954 rates.

Forecast of Wells and Footage to Be Drilled in 1955

Forecast covers all new wells to be drilled for oil or gas in 1955, salt-water disposal wells, and water or gas-input wells for repressuring and secondary recovery, but does not estimate old wells drilled deeper.

State or District	TOTAL NEW WELLS				WILDCAT TESTS			FOOTAGE (New Wells)			
	Forecast For 1955	Drilled In 1954	% Diff. '54-'55	% of U.S. 1955	Forecast For 1955	Drilled In 1954	% Diff. '54-'55	Forecast For 1955	Drilled In 1954	% Diff. '54-'55	% of U.S. 1955
Alabama	**75**	69	+ 8.7	0.1	**64**	59	+ 8.5	**262,500**	359,753	—27.0	0.1
Arizona	**7**	10	—30.0	....	**7**	10	— 30.0	**31,500**	43,603	—27.8	....
Arkansas	**570**	581	— 1.9	1.1	**135**	112	+ 20.5	**1,978,000**	2,049,830	— 3.5	0.9
California	**2,260**	2,433	— 7.1	4.3	**340**	378	— 10.1	**10,339,500**	11,065,195	— 6.6	4.8
Colorado	**1,220**	1,324	— 7.9	2.3	**585**	643	— 9.0	**6,710,000**	7,255,077	— 7.5	3.2
Florida	**30**	31	— 3.2	0.1	**27**	29	— 6.9	**190,500**	195,566	— 2.6	....
Illinois	**3,620**	3,265	+10.9	6.8	**710**	620	+ 14.5	**8,865,000**	7,984,248	+11.0	4.2
Indiana	**885**	865	+ 2.3	1.7	**294**	289	+ 1.7	**1,350,000**	1,316,430	+ 2.6	0.6
Kansas	**4,285**	4,222	+ 1.5	8.2	**931**	918	+ 1.4	**15,255,000**	15,005,973	+ 1.7	7.1
Kentucky	**1,210**	1,383	—12.5	2.3	**71**	81	— 12.4	**2,298,000**	2,589,141	—11.3	1.1
Louisiana	**4,130**	3,650	+13.2	7.8	**526**	470	+ 11.9	**26,151,000**	22,651,830	+15.4	12.2
North Louisiana	**2,150**	1,946	+10.5	4.1	**220**	188	+ 17.0	**6,450,000**	5,778,702	+11.6	3.0
South Louisiana	**1,980**	1,704	+16.2	3.7	**306**	282	+ 8.5	**19,701,000**	16,873,128	+16.8	9.2
Michigan	**605**	557	+ 8.6	1.2	**251**	229	+ 9.6	**1,670,000**	1,534,855	+ 8.8	0.7
Mississippi	**485**	450	+ 7.8	0.9	**268**	182	+ 47.3	**3,463,000**	3,203,617	+ 8.1	1.7
Missouri	**15**	11	+36.4	....	**12**	6	+100.0	**15,000**	11,798	+27.1	....
Montana	**410**	349	+17.5	0.8	**110**	116	— 5.2	**1,661,000**	1,406,623	+18.1	0.7
Nebraska	**440**	469	— 6.2	0.8	**181**	193	— 6.2	**2,466,200**	2,624,696	— 6.0	1.2
New Mexico	**1,225**	1,168	+ 4.9	2.4	**193**	219	— 11.9	**6,370,000**	6,133,214	+ 3.9	3.0
New York	**435**	516	—15.7	0.8	.....	.....	.....	**618,000**	748,453	—17.4	0.2
North Dakota	**280**	296	— 5.4	0.5	**106**	112	— 5.4	**1,965,000**	2,075,265	— 5.5	1.0
Ohio	**1,070**	1,062	+ 0.8	2.1	**23**	13	+ 76.9	**2,140,000**	2,108,972	+ 1.5	1.0
Oklahoma	**7,710**	7,919	— 2.6	14.6	**795**	866	— 8.2	**26,368,000**	27,055,491	— 2.6	12.2
Pennsylvania	**825**	929	—11.2	1.6	.....	1	.....	**1,567,500**	1,729,607	— 9.4	0.8
South Dakota	**15**	20	—25.0	....	**14**	15	— 6.7	**77,000**	102,156	—24.6	....
Tennessee	**25**	.....	.....	0.1	.....	.....	.....	**29,000**	.....	.....	....
Texas	**18,995**	18,539	+ 2.5	36.1	**4,962**	4,892	+ 1.4	**84,860,000**	82,279,758	+ 3.1	39.6
Dist. 1: S. Central	**1,235**	1,190	+ 3.8	2.3	**373**	355	+ 5.1	**3,940,000**	3,797,362	+ 3.8	1.9
Dist. 2: Middle Gulf	**765**	815	— 6.1	1.5	**281**	307	— 8.5	**4,743,000**	4,993,068	— 5.0	2.2
Dist. 3: Upper Gulf	**2,040**	1,760	+15.9	3.8	**516**	452	+ 14.2	**13,465,000**	11,698,015	+15.1	6.2
Dist. 4: L. Gulf-S.W.	**1,385**	1,413	— 2.0	2.7	**404**	420	— 3.8	**7,208,000**	7,353,949	— 2.0	3.4
Dist. 5 & 6: East	**1,255**	1,098	+14.3	2.4	**394**	344	+ 14.5	**6,526,000**	5,719,806	+14.1	3.0
Dist. 7-B & 9: North	**7,115**	7,133	— 0.3	13.5	**1,992**	2,050	— 2.8	**21,630,000**	21,873,496	— 1.1	10.1
Dist. 7-C & 8: West	**4,265**	4,177	+ 2.1	8.1	**928**	888	+ 4.5	**24,225,000**	23,671,570	+ 2.3	11.3
Dist. 10: Panhandle	**935**	953	— 1.9	1.8	**74**	76	— 2.6	**3,123,000**	3,172,492	— 1.6	1.5
Utah	**90**	69	+30.4	0.1	**75**	50	+ 50.0	**414,000**	305,564	+35.5	0.2
West Virginia	**615**	572	+ 7.5	1.2	.....	3	.....	**1,796,000**	1,656,347	+ 8.4	0.8
Wyoming	**1,045**	1,117	— 6.5	2.0	**261**	283	— 7.8	**5,560,000**	5,909,032	— 5.9	2.6
Other States*	**35**	26	+34.6	0.1	**35**	26	+ 34.6	**154,000**	98,843	—55.8	0.1
Total U. S.	**52,612**	51,902	+ 1.9	100.0	**10,976**	10,815	+ 1.5	**214,624,700**	209,501,937	+ 2.4	100.0

* Other states include Georgia, Idaho, Nevada, Maryland, North Carolina, Oregon and Washington.

Sharp growth in 1954 drilling. U. S. drilling rates in 1954 were substantially higher than ever before. The 51,902 wells completed last year were 2422 more than the previous high of 49,480 completions in 1953, and compared with only 46,507 wells in 1952.

Footage drilled in 1954 reached a total of 209½ million feet of hole, in contrast with only 198 million feet in 1953 and but 188 million feet during 1952.

Texas, Louisiana, Illinois, Colorado and Oklahoma were the chief contributors to the big growth in drilling activity during 1954. Texas' completions rose from 17,041 wells in 1953 to 18,539 in 1954. Enlarged activity in South Central, Middle Gulf Coast, Upper Gulf Coast, East Texas, North Texas and West Texas districts, more than offset decreases in other areas of the state.

Completions in Illinois totaled 3265 in 1954, in contrast with only 2165 wells during 1953. Louisiana completed 3650 wells last year, against only 2733 in 1953. Oklahoma's completions rose from 7280 wells in 1953 to 7919 in 1954. Colorado's completions rose to 1324 in 1954, compared with only 699 in 1952. A number of other states showed small increases in drilling.

Sizable decreases in drilling occurred during 1954 in California, Kansas, Kentucky, New Mexico, New York and Pennsylvania. In addition some other states experienced small declines in activity.

Drilling in 1954 was scattered over 36 states, and included the first producing well in history for Nevada.

Details comparing 1954 and 1953 well completions and footage drilled by states appear in a table on a subsequent page.

How forecasts are made. WORLD OIL's forecast for 1955, like its predecessors for many years, is based on the drilling plans of numerous oil companies, in addition to our own study of current factors affecting oil

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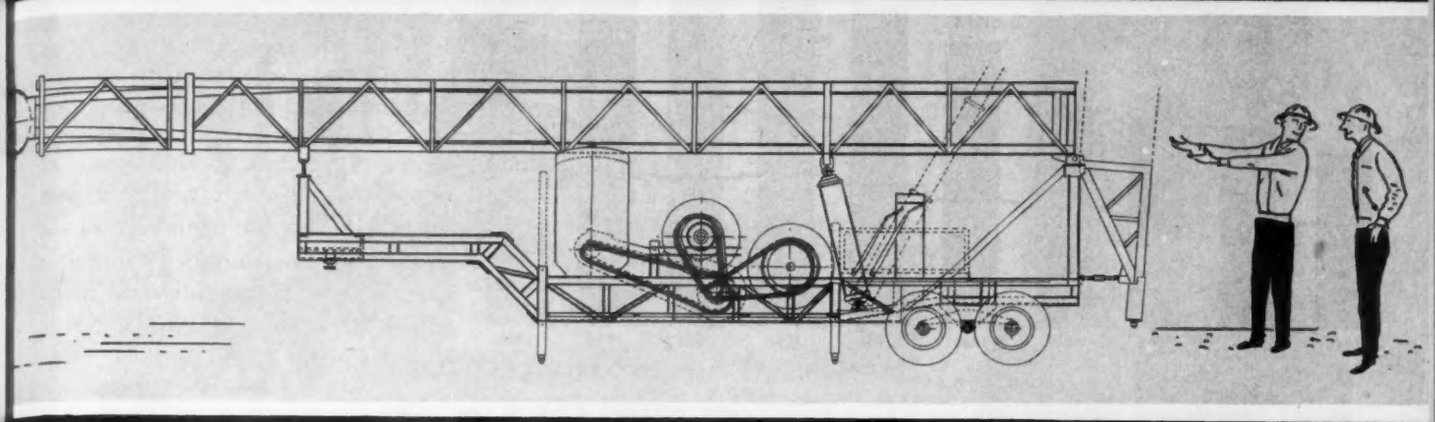
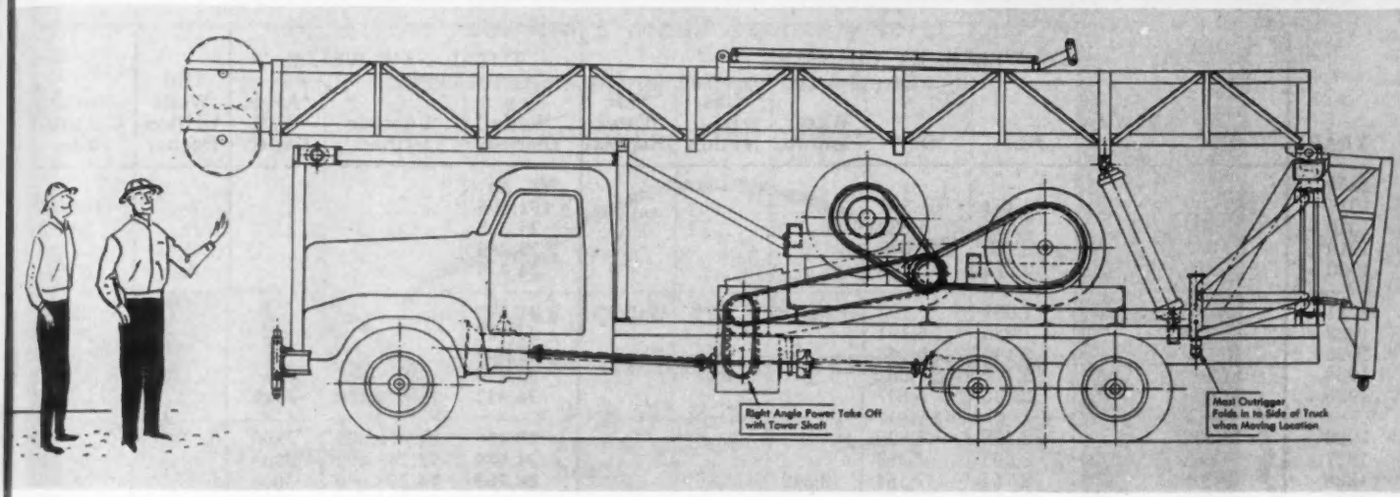


WILSON MANUFACTURES BOTH



Wilson built winches on trucks, with power-take-offs, of Wilson make as early as 1928, and several thousand of these were made, but these were discontinued just before the war because most customers preferred the separate engine.

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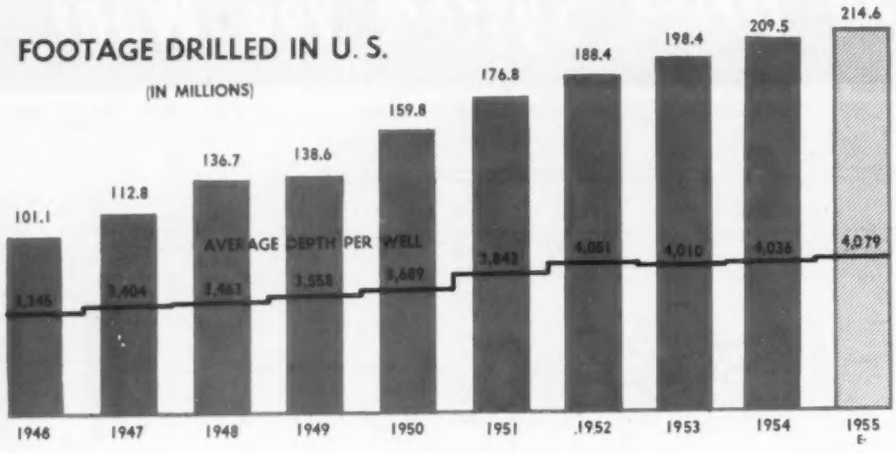

and gas activity.

Oil companies who drilled one-third of the wells in the nation told WORLD OIL how many wells they expected to drill in each state during 1955. This information was given with the understanding all individual company data would be held in strict confidence. When data received from all companies are combined and then compared with the operations of the same concerns during the previous year, an excellent indication is obtained of probable drilling trends in all parts of the U. S.

Wells Completed Annually in United States

Source: WORLD OIL and predecessor, The Oil Weekly, with aid of other authoritative sources, 1921 to now; 1920 and earlier years from U. S. Bureau of Mines and "Petroleum in the United States and Possessions," by Arnold and Kemnitzer.

	NEW WELLS, BY CLASSES							TOTAL NEW WELLS				
YEAR	Oil	Distil-late	Gas	Dry	Water Input	Gas In-jection	Salt Water Disposal	New Wells Drilled	*Footage Drilled	*Avge. Well Depth	Old Wells Drilled Deeper	Total Comple-tions
1859-1917	380,502	....	20,183	91,821	.....	....	....	**492,506**	.....	....	....	492,506
1918	17,860	....	2,324	5,629	.....	....	....	**25,813**	.....	....	....	25,813
1919	21,041	....	2,153	6,075	.....	....	....	**29,269**	.....	....	....	29,269
1920	24,278	....	2,275	7,476	.....	....	....	**34,029**	.....	....	....	34,029
1921	14,715	....	2,081	5,193	.....	....	....	**21,989**	.....	....	....	21,989
1922	17,790	....	1,926	5,191	.....	....	....	**24,907**	.....	....	....	24,907
1923	16,182	....	2,140	6,043	.....	....	....	**24,365**	.....	....	....	24,365
1924	14,707	....	2,172	5,591	.....	....	....	**22,470**	.....	....	....	22,470
1925	17,029	....	2,536	6,847	.....	....	....	**26,412**	**76,594,800**	**2900**	....	26,412
1926	18,626	....	2,502	8,328	.....	....	....	**29,456**	**82,476,800**	**2800**	....	29,456
1927	14,382	....	2,494	7,213	.....	....	....	**24,089**	**72,267,000**	**3000**	....	24,089
1928	12,505	....	2,754	7,154	2,342	....	....	**24,765**	**74,295,000**	**3000**	....	24,765
1929	15,758	....	3,107	7,600	3,898	....	....	**30,363**	**88,052,700**	**2900**	....	30,363
1930	12,133	....	2,971	6,163	2,444	....	....	**23,711**	**68,761,900**	**2900**	....	23,711
1931	7,061	....	2,067	3,264	567	....	....	**12,959**	**37,892,116**	**2924**	....	12,959
1932	10,569	....	1,079	3,389	799	....	....	**15,836**	**47,682,196**	**3011**	....	15,836
1933	7,887	....	1,190	3,492	954	....	....	**13,523**	**39,568,298**	**2926**	....	13,523
1934	13,119	....	1,496	4,811	1,696	....	....	**21,122**	**56,141,433**	**2658**	....	21,122
1935	15,418	....	1,802	5,696	1,665	....	....	**24,581**	**67,844,939**	**2760**	....	24,581
1936	18,704	....	2,375	5,787	2,096	....	....	**28,962**	**80,996,816**	**2797**	....	28,962
1937	23,115	....	2,732	6,627	2,739	....	....	**35,213**	**105,099,189**	**2985**	....	35,213
1938	19,106	....	2,143	6,515	1,363	....	....	**29,127**	**90,585,158**	**3110**	....	29,127
1939	17,734	....	2,030	6,890	1,358	....	....	**28,012**	**85,523,094**	**3053**	....	28,012
1940	19,843	....	2,265	7,053	1,988	....	....	**31,149**	**96,182,605**	**3088**	....	31,499
1941	19,590	....	3,279	7,280	2,197	117	47	**32,510**	**99,347,714**	**3056**	822	33,332
1942	10,977	105	2,685	5,962	2,141	73	47	**21,990**	**67,903,053**	**3088**	588	22,578
1943	9,887	76	2,314	6,364	1,576	90	42	**20,349**	**61,991,857**	**3046**	471	20,820
1944	13,502	54	3,024	7,153	1,784	218	51	**25,786**	**84,378,457**	**3272**	377	26,163
1945	13,944	153	3,039	7,346	1,796	329	42	**26,649**	**92,982,113**	**3489**	491	27,140
1946	16,087	207	3,355	8,496	1,816	219	50	**30,230**	**101,124,813**	**3345**	615	30,845
1947	17,613	283	3,437	9,751	1,861	156	46	**33,147**	**112,816,124**	**3404**	651	33,798
1948	22,197	346	2,966	11,939	1,885	84	60	**39,477**	**136,709,153**	**3463**	533	40,010
1949	21,415	378	3,121	12,898	1,036	56	58	**38,962**	**138,616,941**	**3558**	535	39,497
1950	23,775	465	3,015	14,918	993	38	103	**43,307**	**159,761,732**	**3689**	751	44,058
1951	23,532	344	3,198	17,497	1,323	35	67	**45,996**	**176,757,221**	**3843**	770	46,766
1952	23,371	348	3,345	18,211	1,147	25	62	**46,509**	**188,378,059**	**4051**	537	47,046
1953	25,251	374	3,858	18,759	1,129	25	90	**49,480**	**198,431,603**	**4010**	486	49,966
1954†	28,141	672	3,366	18,930	648	70	75	**51,902**	**209,501,937**	**4036**	494	52,396
Total	1,019,346	3,805	114,799	395,362	45,235	1,535	840	**1,580,922**	.....	....	8,121	1,589,043

* Footage data not available prior to 1925 and estimated 1925-1930; actual statistics after 1930.

† Data for 1954 subject to slight revision.

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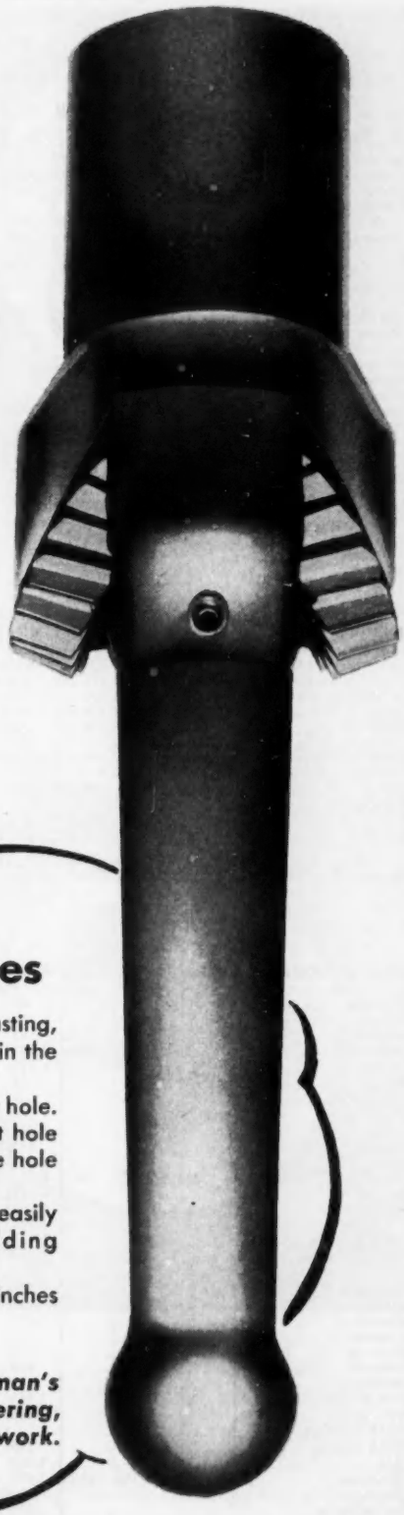
2 CUTTER HOLE OPENER

The tool that's made explicitly for directional drilling work, and used to ream pilot holes to full gauge.



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- The entire body is a one piece steel casting, preventing "back-off" or "break-off" in the hole.
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- Rugged roller bearing cutters that are easily and quickly changed. No welding necessary.
- Available in sizes ranging from 5⅝ inches to 14½ inches.

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EASTMAN INTERNATIONAL COMPANY
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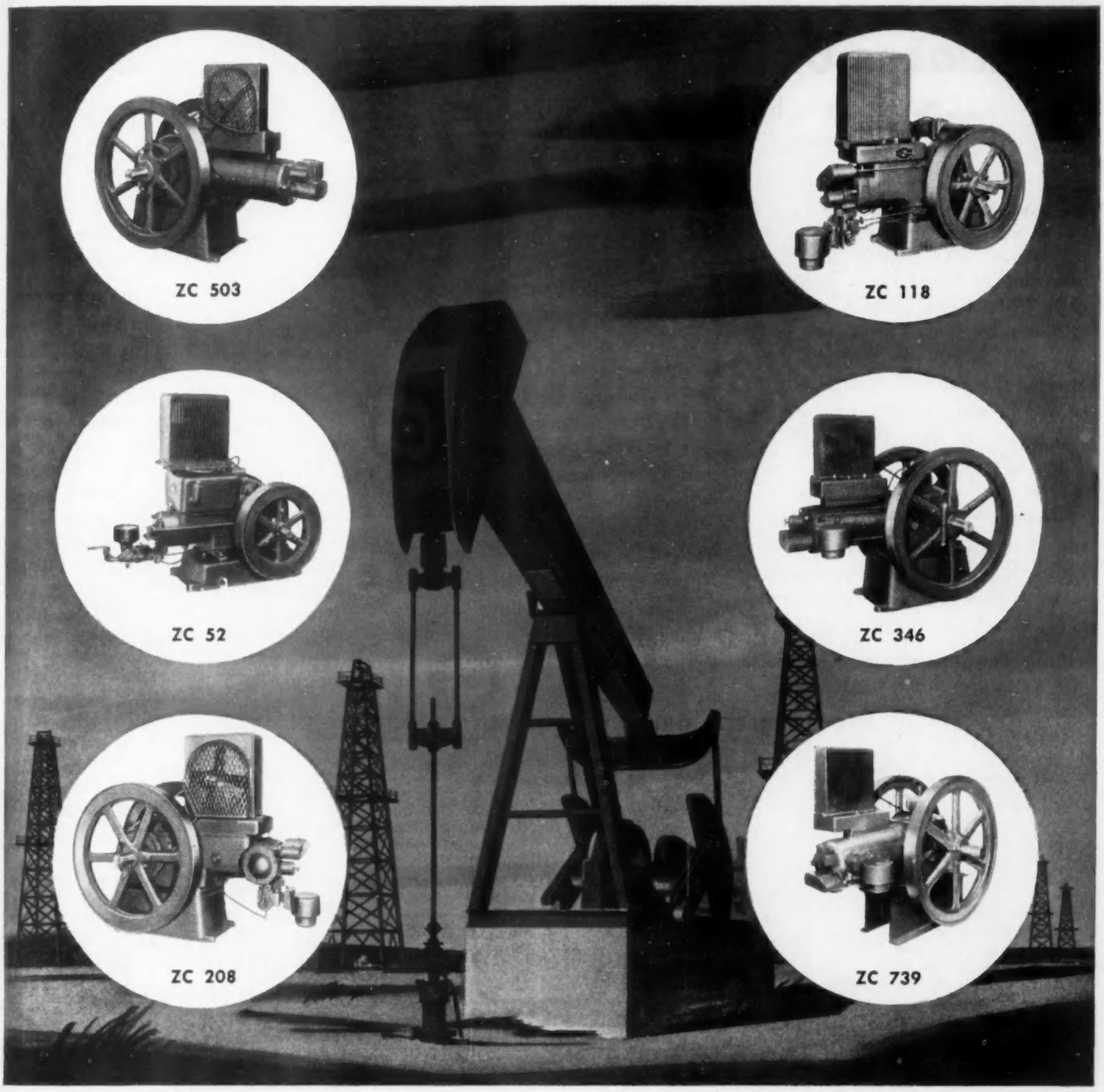
DIRECTIONAL DRILLING Eastman OIL WELL SURVEYS

Footage and Average Depths Drilled in All Wells in the United States in 1954

STATE or DISTRICT	OIL			DISTILLATE			GAS			DRY			WATER INPUT			GAS INPUT		
	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth
Alabama	4	20,092	5023				2	2,694	1347	63	336,967	5349						
Arizona							2	12,829	6415	8	30,774	3847						
Arkansas	319	1,053,941	3304				8	42,077	5260	253	949,142	3752				1	4,670	4670
California	1,703	7,857,046	4614				54	231,488	4287	675	2,973,151	4405						
Colorado	490	2,697,939	5506	4	22,184	5546	62	327,015	5274	768	4,207,939	5479						
Florida	2	22,909	11455							29	172,657	5954						
Georgia										8	20,508	2564						
Illinois	1,787	4,639,979	2597				8	9,076	1135	1,465	3,329,834	2273	4	5,062	1266	1	297	297
Indiana	287	456,280	1590				19	20,062	1056	559	840,088	1503						
Kansas	2,138	7,554,440	3533				363	1,132,295	3119	1,690	6,201,211	3669						
Kentucky	560	916,307	1636				192	445,263	2319	625	1,218,536	1950	6	9,035	1506			
Louisiana	2,213	10,875,418	4914	190	2,026,488	10666	251	1,993,099	7941	994	7,739,971	7787				1	11,496	11496
North Louisiana	1,380	3,060,333	2218	40	295,154	7379	114	508,910	4464	412	1,914,305	4646						
South Louisiana	833	7,815,085	9382	150	1,731,334	11542	137	1,484,189	10833	582	5,825,666	10010				1	11,496	11496
Michigan	217	691,758	3188				10	24,801	2480	328	814,753	2484						
Mississippi	146	1,100,359	7537	19	161,628	8507	12	87,092	7258	273	1,854,538	6793						
Missouri										11	11,798	1073						
Montana	171	660,224	3861				11	27,867	2533	167	718,532	4303						
Nebraska	217	1,268,848	5847				24	108,049	4502	228	1,247,799	5473						
Nevada	1	10,358	10358							11	51,354	4669						
New Mexico	582	3,400,161	5842	7	83,430	11919	339	1,344,987	3968	238	1,297,702	5453				2	6,934	3467
New York	316	435,478	1378										200	312,975	1565			
North Dakota	168	1,416,037	8429				5	42,096	8419	123	618,132	5025						
Ohio	475	1,043,477	2197				249	510,477	2050	338	555,018	1642						
Oklahoma	4,907	16,972,083	3459	45	293,543	6523	333	1,186,293	3562	2,544	8,399,700	3302	71	166,567	2346			
Pennsylvania	323	524,489	1624				189	444,959	2354	76	213,566	2810	281	450,443	1603	60	96,150	1603
South Dakota	2	18,055	9028							18	84,101	467						
Texas	10,292	45,486,608	4420	405	3,251,266	8028	805	3,675,874	4566	6,925	29,604,298	4275	86	178,641	2077	5	14,619	2924
Dist. 1: South Central	709	2,198,341	3101	8	71,983	8998	25	130,574	5223	447	1,393,455	3117						
Dist. 2: Middle Gulf	281	1,668,733	5939	61	484,427	7941	98	546,827	5580	375	2,293,081	6115						
Dist. 3: Upper Gulf	904	5,512,739	6098	105	971,970	9257	43	248,059	5769	703	4,945,849	7035						
Dist. 4: Lower Gulf-S.W.	568	2,791,482	4915	141	1,084,379	7691	80	361,823	4523	623	3,111,815	4995						
Dist. 5: East Central	93	307,126	3302	4	30,500	7625	16	86,574	5411	207	780,306	3770						
Dist. 6: Northeast	301	1,581,231	5253	54	275,930	6962	131	868,558	6630	291	1,685,981	5794						
Dist. 7-B: North Central	1,513	4,805,048	3176	1	4,657	4657	42	117,686	2802	1,470	4,569,281	3108	4	13,311	3328			
Dist. 7-C: West Central	776	4,326,578	5575	6	49,747	8291	24	112,413	4684	477	2,177,087	4564	2	7,896	3948			
Dist. 8: West	2,277	13,283,024	5836	11	92,512	8410	21	144,254	6869	567	3,438,739	6065	16	39,320	2458			
Dist. 9: North	2,309	7,182,151	3111	10	62,309	6231	39	229,085	5874	1,664	4,725,230	2840	64	118,114	1846	5	14,619	2924
Dist. 10: Panhandle	561	1,830,155	3262	4	22,852	5713	286	830,021	2902	101	483,474	4787						
Utah	7	35,354	5051				7	32,990	4713	55	237,220	4313						
Washington							1	3,452	3452	5	13,171	2634						
West Virginia	65	138,032	2124				396	1,172,321	2960	111	345,994	3117						
Wyoming	749	4,066,727	5430	2	14,570	7285	24	126,482	5270	342	1,701,253	4974						
Total United States	28,141	113,362,399	4028	672	5,853,109	8710	3,366	13,003,638	3863	18,930	75,789,707	4,004	648	1,122,723	1733	70	134,166	1917

STATE or DISTRICT	SALT WATER DISPOSAL			TOTAL NEW WELLS (Preceding Classes) 1954			TOTAL NEW WELLS (Preceding Classes) 1953			OLD WELLS DRILLED DEEPER, 1954 (Productive and Dry)			TOTAL ALL WELLS 1954			TOTAL ALL WELLS 1953		
	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth
Alabama				69	359,753	5214	107	545,580	5099	2	1,706	853	71	361,459	5091	108	546,390	5059
Arizona				10	43,603	4360	6	19,960	3327				10	43,603	4360	6	19,960	3327
Arkansas				581	2,049,830	3528	554	2,079,777	3754	1	422	422	582	2,050,252	3523	559	2,080,950	3723
California	1	3,510	3510	2,433	11,065,195	4548	2,575	11,349,317	4408	94	97,217	1034	2,527	11,162,412	4417	2,664	11,427,579	4290
Colorado				1,324	7,255,077	5480	699	3,639,412	5207	1	52	52	1,325	7,255,129	5476	705	3,648,476	5175
Florida				31	195,566	6309	33	205,666	6232				31	195,566	6309	33	205,666	6232
Georgia				8	20,508	2564	9	24,804	2756				8	20,508	2564	9	24,804	2756
Idaho							4	22,748	5687	1	2,372	2372	1	23,72	2372	4	22,748	5687
Illinois				3,265	7,984,248	2445	2,165	5,430,731	2508	4	1,198	300	3,269	7,985,446	2443	2,166	5,431,595	2508
Indiana				865	1,316,430	1522	1,312	2,173,519	1657	3	738	246	868	1,317,168	1517	1,312	2,173,519	1657
Iowa							1	443	443							1	443	443
Kansas	31	118,027	3807	4,222	15,005,973	3554	4,451	15,490,479	3480	1	1,801	1801	4,223	15,007,774	3554	4,451	15,490,479	3480
Kentucky				1,383	2,589,141	1872	1,448	2,809,807	1940	1	350	350	1,384	2,589,491	1871	1,448	2,809,807	1940
Louisiana	1	5,358	5358	3,650	22,651,830	6206	2,733	18,646,075	6823	10	30,654	3065	3,660	22,682,484	6197	2,744	18,666,548	6803
North Louisiana				1,946	5,778,702	2970	1,248	4,365,997	3498	2	2,212	1106	1,948	5,780,914	2968	1,250	4,371,067	3497
South Louisiana	1	5,358	5358	1,704	16,873,128	9902	1,485	14,280,078	9616	8	28,442	3555	1,712	16,901,570	9872	1,494	14,295,481	9569
Maryland							5	19,715	3943							5	19,715	3943
Michigan	2	3,543	1772	557	1,534,855	2756	622	1,601,588	2575	9	5,716	635	566	1,540,571	2722	628	1,605,992	2557
Mississippi				450	3,203,617	7119	422	2,897,226	6865				450	3,203,617	7119	424	2,898,622	6836
Missouri				11	11,798	1073	45	42,645	948				11	11,798	1073	45	42,645	948
Montana				349	1,406,623	4030	409	1,824,273	4460	1	555	555	350	1,407,178	4021	414	1,832,866	4427
Nebraska				469	2,624,696	5596	314	1,619,722	5158				469	2,624,696	5596	314	1,619,722	5158
Nevada				12	61,712	5143	8	11,842	1480				12	61,712	5143	8	11,842	1480
New Mexico				1,168	6,133,214	5251	1,447	8,190,244	5660	12	12,706	1059	1,180	6,145,920	5208	1,454	8,209,881	5646
New York				516	748,453	1450	1,002	1,458,602	1456				516	748,453	1450	1,002	1,458,602	1456
North Carolina							2	7,971	3986							2	7,971	3986
North Dakota				296	2,076,265	7014	269	1,924,042	7153	1	67	67	297	2,076,332	6991	269	1,924,042	7153
Ohio				1,062	2,108,972	1986	966	1,968,814	2038	14	7,093	507	1,076	2,116,065	1967	975	1,976,240	2027
Oklahoma	19	37,305	1963	7,919	27,055,491	3417	7,280	25,555,956	3510	154	90,617	588	8,073	27,146,108	3363	7,431	25,653,461	3452
Oregon							1	1,894	1894							1	1,894	1894
Pennsylvania				929	1,729,607	1862	1,895	4,259,083	2248	14	14,307	1022	943	1,743,914	1849	1,912	4,286,149	2242
South Dakota				20	102,156	5108	22	101,331	4606				20	102,156	5108	22	101,331	4606
Tennessee							30	34,226	1141							30	34,226	1141
Texas	21	68,452	3260	18,539	82,279,758	4438	17,041	77,793,633	4565	168	169,141	1007	18,707	82,448,899	4407	17,213	77,917,234	4527
Dist. 1: South Central	1	3,009	3009	1,190	3,797,362	3191	857	2,738,947	3196	2	998	499	1,192	3,798,360	3187	859	2,740,571	3190
Dist. 2: Middle Gulf				815	4,993,068	6126	807	4,959,409	6145	1	551	551	816	4,993,619	6120	807	4,959,409	6145
Dist. 3: Upper Gulf	5	19,398	3880	1,760	11,698,015	6647	1,673	11,239,267	6718	7	9,988	1427	1,767	11,708,003	6626	1,684	11,252,436	6682
Dist. 4: L. Gulf-S.W.	1	4,450	4450	1,413	7,353,949	5204	1,833	10,394,598	5671	11	12,928	1175	1,424	7,366,877	5173	1,834	10,395,451	5668
Dist. 5: East Central	1	3,600	3600	321	1,208,106	3764	275	1,099,049	3997	1	2,671	2671	322	1,210,777	3760	277	1,099,593	3970
Dist. 6: Northeast				777	4,511,700	5807	516	3,070,184	5950	3	4,893	1631	780	4,516,593	5791	516	3,070,184	5950
Dist. 7-B: N. Central	5	15,004	3001	3,035	9,524,987	3138	3,111	10,081,832	3241	20	10,663	533	3,055	9,535,650	3121	3,126	10,094,458	3229
Dist. 7-C: W. Central				1,285	6,673,721	5194	1,318	6,529,684	4954	14	9,294	664	1,299	6,683,015	5145	1,349	6,554,519	4859
Dist. 8: West				2,892	16,997,849	5878	2,373	13,621,103	5740	65	93,407	1437	2,957	17,091,256	5780	2,476	13,687,538	5528
Dist. 9: North	7	17,001	2429	4,098	12,348,509	3013	3,658	12,104,296	3309	41	20,504	500	4,139	12,369,013	2988	3,665	12,107,811	3304
Dist. 10: Panhandle	1	5,990	5990	953	3,172,492	3329	620	1,955,264	3154	3	3,244	1081	956	3,175,736	3322	620	1,955,264	3154
Utah				69	305,564	4428	81	433,014	5346				69	305,564	4428	81	433,014	5346
Virginia							26	110,811	4262							26	110,811	4262
Washington				6	16,623	2771	2	6,111	3056				6	16,623	2771	2	6,111	3056
West Virginia				572	1,656,347	2896	607	1,685,803	2777				572	1,656,347	2896	610	1,688,461	2768
Wyoming				1,117	5,909,032	5290	887	4,444,739	5011	3	5,036	1679	1,120	5,914,068	5281	888	4,450,269	5012
Total United States	75	236,195	3149	51,902	209,501,937	4036	49,480	198,431,603	4010	494	441,748	896	52,396	209,943,685	4007	49,966	198,840,065	3980



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Purchases of Equipment . . . Contractors and producing companies in U. S. expect to buy more equipment in 1955 than in 1954, survey shows.

DRILLING CONTRACTORS and producing companies expect to buy more equipment in 1955 than in 1954. This conclusion is based on a survey in which WORLD OIL asked U. S. drilling contractors and producing companies by what percentage they expected their purchases of both drilling and producing equipment during 1955 to change from 1954 purchases.

Half of the replies expressed the thought that their 1955 purchases would be the same as in 1954. However, a much larger portion of the replies expected their equipment purchases to be higher in 1955 than expected purchases to be smaller.

Drilling Equipment. Of 265 companies which replied, 53.6 percent said their purchases of drilling equipment would be the same. However, 29.8 percent thought they would buy more drilling equipment, while only 16.6 percent thought their purchases would be smaller in 1955. The 29.8 percent which said their purchases were likely to be higher included 23.8 percent that expected their purchases to exceed 1954 purchases by more than 10 percent.

This information is based on replies from 195 drilling contractors and 70 producing companies. Contractors foresaw higher drilling equipment buying than did the producing companies. Of the contractors, 51.3 percent said their purchases would be the same as in 1954, while 32.3 percent said higher, and only 16.4 percent said lower.

Production Equipment. Of 243 companies replying to that portion dealing with purchasing of producing equipment, 58.8 percent said they would buy the same amount in 1955 as in 1954. However, 36.6 percent thought they would purchase more producing equipment than last year, including 24.3 percent which indicated their buying likely would exceed 1954 purchases by more than 10 percent. Only 4.6 percent of the companies said their producing equipment purchases would be smaller than in 1954.

PROSPECTS FOR DRILLING EQUIPMENT PURCHASES IN 1955

	Number of Companies Replying	PERCENT OF REPLIES						
		Saying Purchases Will be Same as in 1954	Saying Purchases Will Be Higher Than in 1954			Saying Purchases Will Be Lower Than in 1954		
			Higher By 5 to 10%	Higher By Over 10%	Total Saying Higher	Lower By 5 to 10%	Lower By Over 10%	Total Saying Lower
Drilling Contractors	**195**	**51.3%**	**5.6%**	**26.7%**	**32.3%**	**1.5%**	**14.9%**	**16.4%**
Owning 1 to 4 rigs each	112	52.6%	4.5%	30.3%	34.8%	1.8%	10.8%	12.6%
Owning 5 to 10 rigs each	64	48.4%	7.8%	20.4%	28.2%	1.6%	21.8%	23.4%
Owning over 10 rigs each	19	52.6%	5.3%	26.3%	31.6%	.....	15.8%	15.8%
Producing Companies	**70**	**60.0%**	**7.1%**	**15.7%**	**22.8%**	**5.7%**	**11.5%**	**17.2%**
With over 10,000 barrels daily	26	57.7%	7.7%	7.7%	15.4%	11.6%	15.3%	26.9%
With 1,000 to 9,999 barrels daily	17	70.6%	5.9%	11.7%	17.6%	.....	11.8%	11.8%
With under 1,000 barrels daily	27	55.6%	7.4%	25.9%	33.3%	3.7%	7.4%	11.1%
Total All Contractors and Producers	**265**	**53.6%**	**6.0%**	**23.8%**	**29.8%**	**2.6%**	**14.0%**	**16.6%**

PROSPECTS FOR PRODUCTION EQUIPMENT PURCHASES IN 1955

	Number of Companies Replying	PERCENT OF REPLIES						
		Saying Purchases Will be Same as in 1954	Saying Purchases Will Be Higher Than in 1954			Saying Purchases Will Be Lower Than in 1954		
			Higher By 5 to 10%	Higher By Over 10%	Total Saying Higher	Lower By 5 to 10%	Lower By Over 10%	Total Saying Lower
Producing Companies	**97**	**50.5%**	**17.5%**	**22.8%**	**40.3%**	**4.1%**	**5.1%**	**9.2%**
With over 10,000 barrels daily	40	37.5%	30.0%	20.0%	50.0%	10.0%	2.5%	12.5%
With 1,000 to 9,999 barrels daily	30	63.4%	16.7%	13.3%	30.0%	.....	6.6%	6.6%
With under 1,000 barrels daily	27	55.6%	.....	37.0%	37.0%	.....	7.4%	7.4%
Drilling Contractors with Production	**146**	**64.4%**	**8.9%**	**25.3%**	**34.2%**	.....	**1.4%**	**1.4%**
With over 1,000 barrels daily	12	33.4%	.....	50.0%	50.0%	.....	16.6%	16.6%
With under 1,000 barrels daily	134	67.2%	9.7%	23.1%	32.8%	.....	.....	.....
Total All Producers and Contractors	**243**	**58.8%**	**12.3%**	**24.3%**	**36.6%**	**1.7%**	**2.9%**	**4.6%**

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Tax Law Changes . . . New depreciation techniques encourage earlier replacement of equipment.

By **P. J. AUCOIN,** Certified Public Accountant

RECENT TAX LAW changes may make it advantageous to replace equipment more frequently than in the past.

Larger depreciation charge-offs in the first few years of the life of new equipment are now possible through optional use of two new depreciation methods in addition to the long-employed straight-line technique. The new methods are (1) the declining-balance and (2) the sum-of-the-year's digits.

By the straight-line formula, if a piece of equipment costing $1000 had a useful life of ten years with no salvage value, depreciation was charged off at a rate of $100 per year.

Under the declining-balance method the taxpayer may elect to use depreciation rates which are larger in early years than those permitted under the straight-line method. Thus, on a piece of equipment costing $1000 with a useful life of ten years, the taxpayer could charge off $200 the first year, $160 the next, $128 the next, $102.40 the next, and so on.

A disadvantage of the declining-balance method is that if it is followed through to the end of the ten-year period, the equipment will not be fully depreciated. It also should be borne in mind that whatever reduces profits today may also reduce a base for some excess profits tax of tomorrow, remote as this may seem at present. In the case of the $1000 machine, the undepreciated balance at the end of ten years will be $107.38. If the machine had a salvage value exceeding this amount at the end of ten years, or a trade-in value, no loss would be incurred. If there were no salvage or trade-in value, this could be an item of importance.

The new law further provides that the taxpayer may change from the declining-balance to the straight-line if he so elects. A taxpayer could use the declining-balance method for the first five years, then change over to the straight-line method, enabling him to recover depreciation on the full value of the machine.

The third solution to the unrecovered cost problem permits the taxpayer to use the sum-of-the-year's digits method. This route allows the taxpayer to obtain slightly less depreciation for the first two years, but thereafter the depreciation rate is greater as compared to the declining-balance method. So, the taxpayer is enabled to recover the full value of the machine without any change in depreciation practice.

Under this method the $1000 machine cited above would have a rate of depreciation for the first year amounting to 10/55ths of the cost, the enumerator 10 representing the useful life of the machine, and the denominator 55 being the sum of 1, plus 2, plus 3, plus 4, plus 5, plus 6, plus 7, plus 8, plus 9, plus 10. In the second year the rate of depreciation would be 9/55ths, the third year 8/55ths, fourth year 7/55ths, and so on until the tenth year, when it would become 1/55th.

Using as an example the $1000 machine with a life of ten years and assuming no salvage value, the year-to-year results under each method of depreciation are shown in the table below.

Year	Straight-line Method	Declining-balance Method	Sum-of-the-year's digits Method
1	$100	$200.00	$181.82
2	100	160.00	163.64
3	100	128.00	145.45
4	100	102.40	127.27
5	100	81.92	109.09
6	100	65.54	90.91
7	100	52.43	72.73
8	100	41.94	54.55
9	100	33.55	36.36
10	100	26.84	18.18

The new methods are of particular importance to installment purchasers. By having larger depreciation charges during the earlier years of an asset's life, taxes are reduced and funds ordinarily paid out in taxes may be used to pay installments. Ability to write off the asset more quickly over the first few years reduces the temptation to keep obsolete equipment merely because it has a book value in excess of what it would bring on a trade for new equipment.

These methods also satisfy the view that a new asset will earn more in the first years of its life, and should stand heavier depreciation charges then than later on, when its earning ability has diminished.

Availability of the new methods of depreciation should encourage taxpayers to re-examine their buying policies with reference to the period of time they expect to use equipment. One purpose of the law is undoubtedly to encourage the purchase of new and improved equipment at more frequent intervals. Under the declining-balance method, using as an illustration equipment with a useful life of three years, it is possible to take a depreciation allowance of 66⅔ percent of the cost in the first year, as compared to 33⅓ percent under the old straight-line method.

Since this method will have the effect of encouraging the use of equipment for shorter periods it will also result in lower prices for used equipment.

Both the new methods are available only on new equipment purchased after Dec. 31, 1953, and do not apply to used equipment.

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Owners of New Wells . . . Smaller operators responsible for more than three-fourths of the 51,902 tests completed in U. S. during 1954.

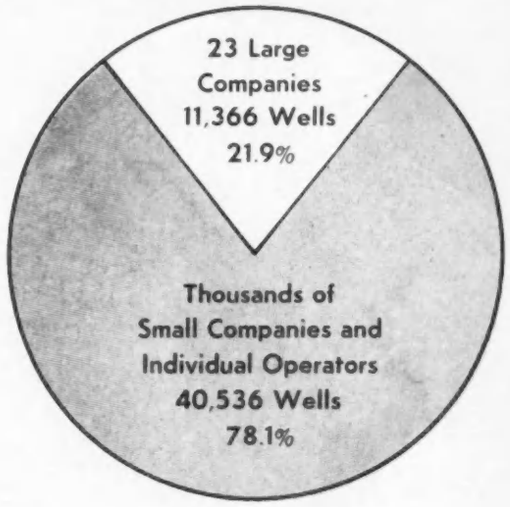
SMALL PRODUCING companies were responsible for a larger proportion of the wells completed in the U. S. during 1954 than in preceding recent years. Of the 51,902 wells drilled in the U. S. last year, the 23 largest producing companies owned only 21.9 percent, or 11,366 of the wells. This means that thousands of smaller producing companies owned 78.1 percent of the wells drilled in the year, or 40,536 wells.

This is a higher percentage of the wells for small companies. In 1953, the 23 largest producing companies owned 23.0 percent, or 11,385 wells, of the 49,480 wells completed in the nation; while small companies owned 77.0 percent, or 38,095 wells.

In 1952, the 23 large companies drilled 10,738 wells, or 23.1 percent, of the 46,507 wells completed in the country. At the same time, small companies drilled 35,769 wells, or 76.9 percent.

During 1951, the 23 large companies drilled 23.7 percent of the 45,996 wells completed in the U. S., while small companies were drilling 76.3 percent.

The 23 largest U. S. producing companies include the following: Amerada Petroleum, Atlantic Refining, Carter Oil, Cities Service, Continental Oil, Gulf Oil, Humble Oil & Refining, Ohio Oil, Phillips Petroleum, Pure Oil, Richfield Oil, Shell Oil, Sinclair Oil, Skelly Oil, Socony-Vacuum (including Magnolia Petroleum and General Petroleum), Standard Oil of California (including The California Company and Standard of Texas), Standard Oil of Indiana (including Stanolind Oil & Gas, Pan American and Pan-Am Southern), Standard of Ohio (including Sohio Petroleum), Sun Oil, Sunray Oil, The Texas Company, Tide Water Associated Oil, and Union Oil.



Drilling Methods . . . Rotary technique steadily increases margin of leadership, accounting for 85 percent of wells in 1954 compared with 67.2 in 1945.

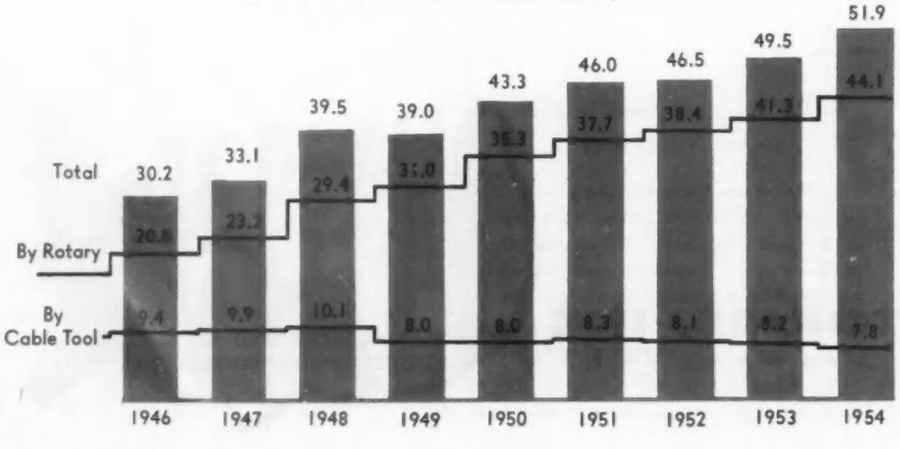
AN INCREASING NUMBER of U. S. wells are being drilled by the rotary method. It is estimated that 85 percent of the wells completed in the U. S. during 1954 were drilled by rotary rigs. On this basis, rotary drilling accounted for 44,117 of the 51,902 wells completed in the U. S. last year. The previous year, 41,316 of the 49,480 wells completed, or 83.5 percent, were drilled by rotary rigs.

Rotary drilling is estimated to have been responsible for only 67.2 percent of the wells drilled in 1945, or but 17,908 wells. In comparison, nearly 2½ times as many wells were drilled by the rotary method in 1954.

On the other hand, cable tool rigs are doing less of the U. S. drilling. They were responsible for an estimated 15 percent of the 1954 wells, or only 7785 completions. This compared with 8164 wells drilled by cable tools in 1953. Reduced drilling in the eastern area, which remains predominately cable tool, is an important factor in the slump in cable tool activity.

UNITED STATES DRILLING METHODS

(THOUSANDS OF WELLS YEARLY)



Estimated Number and Percentages of Wells Drilled in U. S. by Rotary and Cable Tool Methods, by Years

YEAR	Total New Wells	ROTARY		CABLE	
		Wells	Percent	Wells	Percent
1945	26,649	17,908	67.2	8,741	32.5
1946	30,230	20,859	69.0	9,371	31.0
1947	33,147	23,269	70.2	9,878	29.8
1948	39,477	29,410	74.5	10,067	25.5
1949	38,962	30,975	79.5	7,987	20.5
1950	43,307	35,295	81.5	8,012	18.5
1951	45,996	37,717	82.0	8,279	18.0
1952	46,507	38,368	82.5	8,139	17.5
1953	49,480	41,316	83.5	8,164	16.5
1954	51,902	44,117	85.0	7,785	15.0

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Rigs in Operation . . . Fewer active rigs drilled more wells and more footage during 1954.

By PHILIP L. McLAUGHLIN,
World Oil Staff

Fewer rigs drilled more holes and more footage in 1954. Call it better technology, efficiency, or just deeper wells, it still amounts to the fact the petroleum industry as a whole should be proud of the progress made by the drilling branch.

The average number of rigs in operation at the end of each month in 1954 was 4635. This represents an average of 149 fewer rigs in operation at the end of each month during 1954 than in the previous year. This trend has been established since 1950.

Drilling in 1954 got off to a rather strong start, rising to a peak 4743 rigs in February, then began tapering off during the months of March and April, and finally began to nosedive to 4439 rigs in August.

Although 1954's peak was reached early in the year, the sudden surge of drilling during the last three months of 1954 tended to balance out the rig picture, and sent the number of wells drilled to a new record. Unlike 1953, there was no single month in which 5000 rigs were in use, while 1953 had only one month in excess of this number, and 1952 had more than 5000 rigs busy for six of the months.

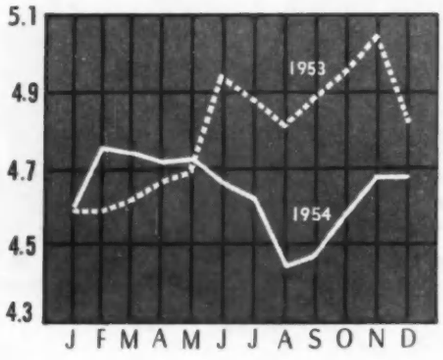
In 1954 as in 1953, the general decline in use of rigs came despite an increase in the number of active rigs in all of the biggest oil states except California. At the end of 1954, Texas had 1371 rigs in operation, up 43 from the end of 1953; Oklahoma had 675, up 19; California had 279, or 34 less than at the end of 1953; and Louisiana had 294, up 42.

Noticeable gains in drilling activity were evident in some areas. West Texas District 8 had 401 rigs in operation at the close of 1954, picking up 68 over 1953. Kansas was up 75 to 478 at the end of 1954. Illinois had 306 active rigs, up 61; South Louisiana 239, up 41; Nebraska 34, up 16.

Among states showing declines were Wyoming with 76 rigs operating at the end of 1954, or 54 less than at the close of 1953; Pennsylvania with 112, down 115; New York 40, down 60; Indiana with 110, or 72 less; and California with 245, down 34.

ACTIVE DRILLING RIGS IN U. S.

(In Thousands)



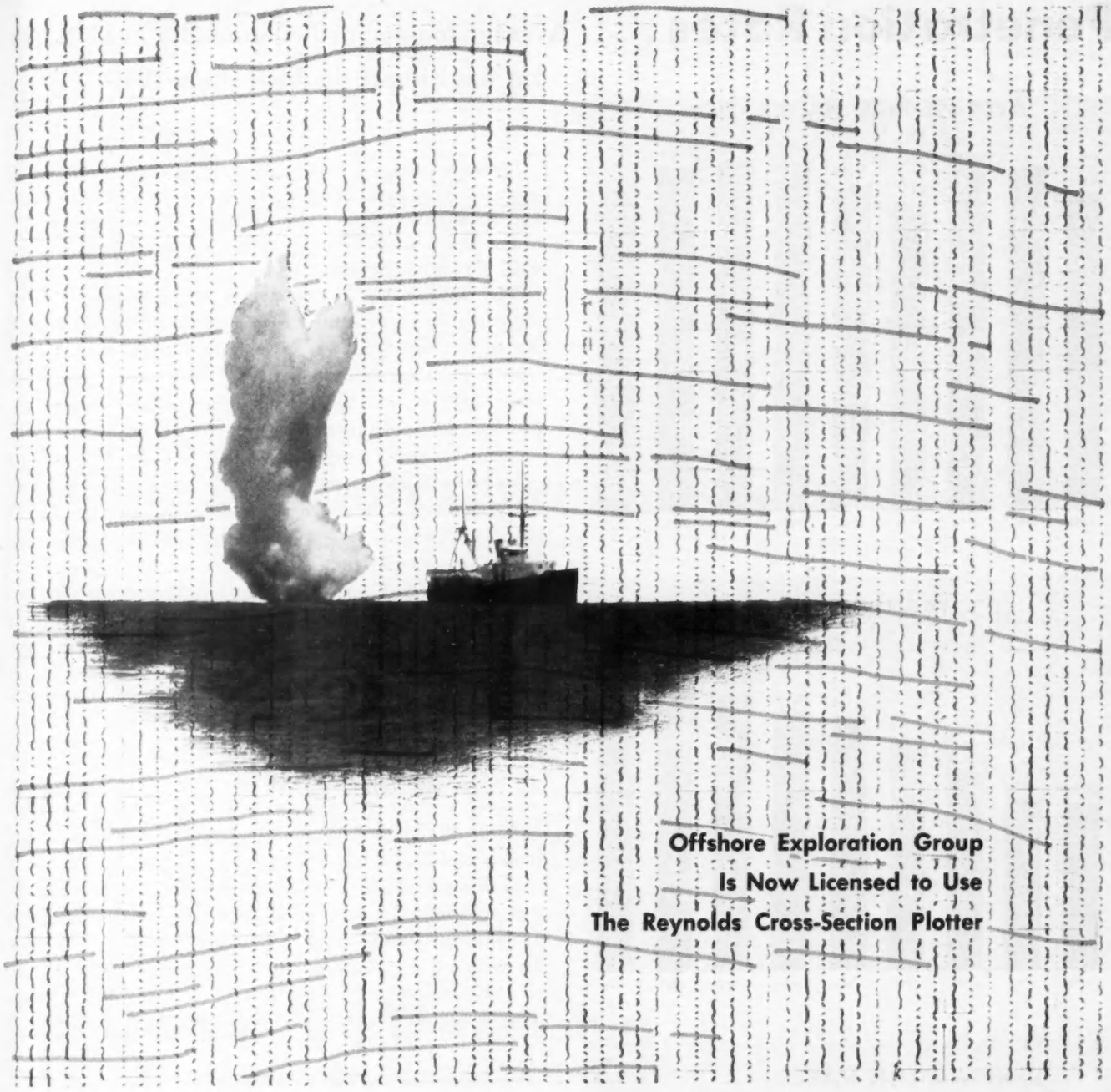
U. S. Drilling Rigs in Operation

State and District	END of YEAR 1953	END of YEAR 1954	CHANGE Rigs	CHANGE Percent
Alabama	3	9	+ 6	+200.0
Arizona	2	1	— 1	— 50.0
Arkansas	39	33	— 6	— 15.4
California	279	245	— 34	— 12.2
Colorado	68	82	+ 14	+ 20.6
Florida	4	4	.....	.....
Georgia	2	.....	— 2	.....
Idaho	.....	1	+ 1	.....
Illinois	245	306	+ 61	+ 24.9
Indiana	182	110	— 72	— 39.6
Kansas	403	478	+ 75	+ 18.6
Kentucky	93	92	— 1	— 1.1
Louisiana	252	294	+ 42	+ 16.7
North Louisiana	54	55	+ 1	+ 1.9
South Louisiana	198	239	+ 41	+ 20.7
Maryland	1	3	+ 2	+200.0
Michigan	102	96	— 6	— 5.9
Mississippi	29	42	+ 13	+ 44.8
Missouri	3	4	+ 1	+ 33.3
Montana	48	51	+ 3	+ 6.3
Nebraska	18	34	+ 16	+ 88.9
Nevada	4	6	+ 2	+ 50.0
New Mexico	149	103	— 46	— 30.9
New York	100	40	— 60	— 60.0
North Dakota	28	25	— 3	— 10.7
Ohio	188	196	+ 8	+ 4.3
Oklahoma	656	675	+ 19	+ 2.9
Oregon	.....	1	+ 1	.....
Pennsylvania	227	112	—115	— 50.7
South Dakota	4	1	— 3	— 75.0
Tennessee	.....	.....	.....	.....
Texas	1,328	1,371	+ 43	+ 3.2
Dist. 1: S. Central	24	48	+ 24	+100.0
Dist. 2: Middle Gulf	41	35	— 6	— 14.6
Dist. 3: Upper Gulf	120	132	+ 12	+ 10.0
Dist. 4: L. Gulf-S.W.	70	71	+ 1	+ 1.4
Dist. 5: E. Central	9	19	+ 10	+111.1
Dist. 6: Northeast	58	50	— 8	— 13.8
Dist. 7-B: N. Central	150	155	+ 5	+ 3.3
Dist. 7-C: W. Central	144	139	— 5	— 3.5
Dist. 8: West	333	401	+ 68	+ 20.4
Dist. 9: North	264	242	— 22	— 8.3
Dist. 10: Panhandle	115	79	— 36	— 31.3
Utah	15	23	+ 8	+ 53.3
Washington	1	.....	— 1	.....
West Virginia	195	166	— 29	— 14.9
Wyoming	134	76	— 58	— 43.3
Total	4,802	4,680	—122	— 2.6

Drilling Rigs in Use in U. S., by Years, by Months

Figures are for end of month, and include rigs drilling, rigging up, and shut down

YEAR	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg. for Year
1938	3,968	3,928	3,973	3,971	3,582	4,830	3,737	3,869	3,742	3,876	3,676	3,434	3,799
1939	3,583	3,391	3,448	3,630	3,695	3,726	3,567	3,718	3,625	3,905	3,981	3,924	3,683
1940	3,990	4,277	4,472	4,327	4,655	4,502	4,235	4,194	3,821	3,921	4,030	3,894	4,193
1941	3,814	3,952	4,121	4,287	4,335	4,598	4,819	4,984	4,693	4,672	4,746	4,336	4,446
1942	3,816	3,067	2,979	2,859	2,868	2,905	3,179	3,007	2,953	3,094	2,962	2,797	3,041
1943	2,691	2,653	2,732	2,756	2,743	2,852	3,015	3,201	3,031	3,548	3,676	3,595	3,041
1944	3,427	3,568	3,702	3,819	3,934	4,278	4,411	4,528	4,566	4,738	4,665	4,640	4,190
1945	4,270	4,154	4,159	4,374	4,637	4,394	4,424	4,289	4,356	4,521	4,426	4,637	4,387
1946	4,337	4,229	4,212	4,405	4,399	4,124	4,235	4,201	4,474	4,410	4,551	4,654	4,353
1947	4,390	4,402	4,379	4,470	4,603	4,802	4,992	5,163	4,979	4,897	4,871	4,945	4,741
1948	4,699	4,542	4,626	4,989	5,067	5,090	5,013	5,058	5,116	5,229	5,060	4,908	4,950
1949	4,511	4,490	4,368	4,265	4,276	4,097	4,015	4,118	4,258	4,247	4,485	4,355	4,290
1950	4,180	4,169	4,114	4,224	4,518	4,760	4,712	4,804	4,633	4,773	4,649	4,665	4,517
1951	4,275	4,339	4,435	4,600	4,831	4,762	4,989	4,988	5,237	5,260	5,234	5,182	4,844
1952	5,010	5,015	5,092	5,093	5,151	5,037	4,694	4,508	4,687	4,659	4,689	4,649	4,857
1953	4,585	4,585	4,611	4,661	4,693	4,935	4,878	4,997	4,879	4,939	5,047	4,802	4,784
1954	4,597	4,743	4,732	4,709	4,716	4,656	4,616	4,439	4,467	4,581	4,685	4,680	4,635



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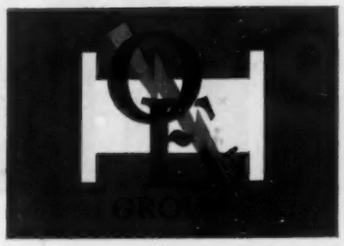
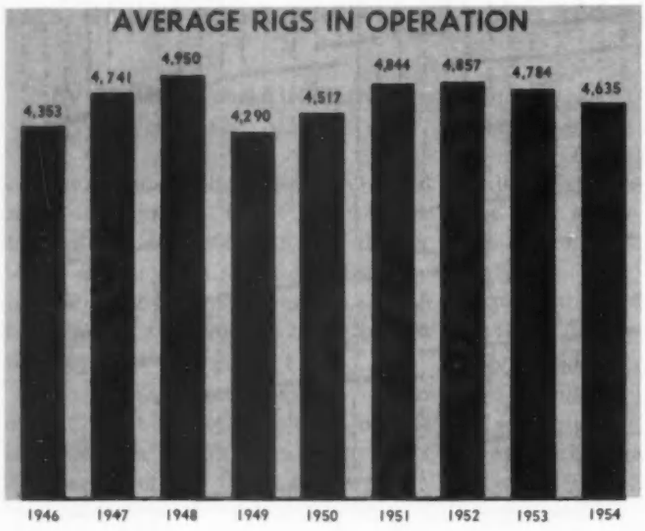
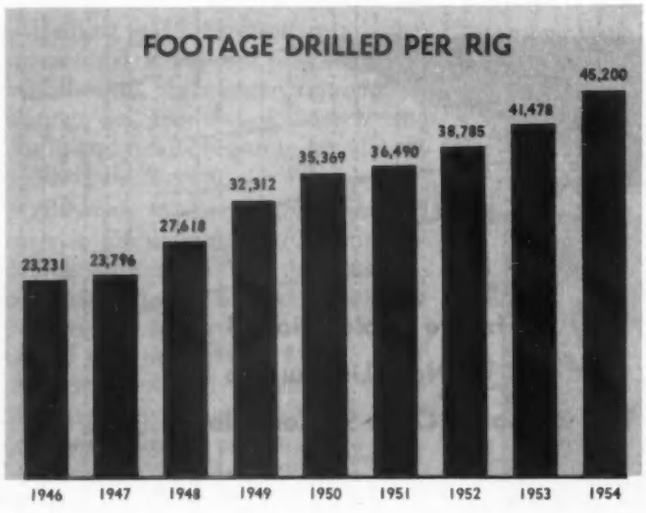
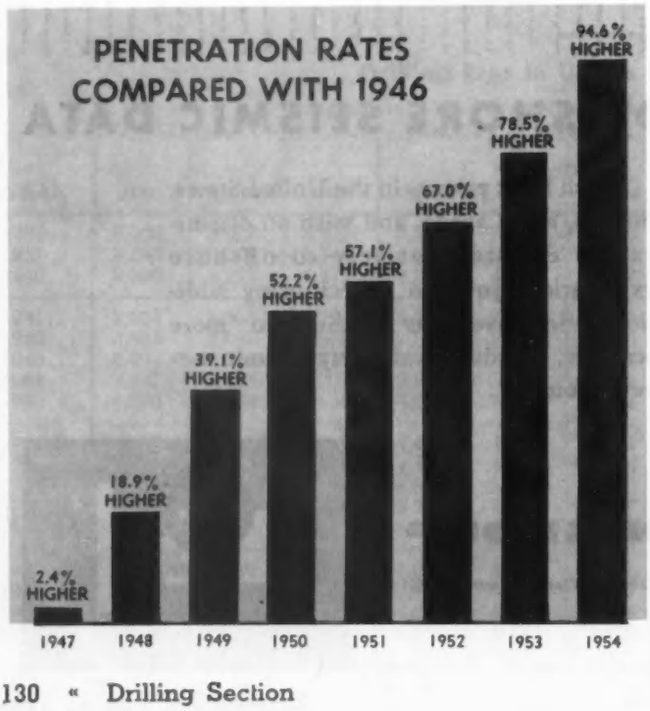


Penetration Rates . . .

Average footage drilled annually in U. S. per rig has almost doubled since 1946.







DESPITE GREATLY expanded U. S. drilling rates, fewer rigs are being used. The industry is able to drill more wells and footage with fewer rigs because of faster penetration rates. Much more footage now is being drilled per rig than in previous years.

The ability to drill more footage with fewer rigs showed considerable improvement during the past year. An average of but 4635 rigs was in operation at the end of each month during 1954, when 51,902 wells were completed and 209½ million feet of hole were drilled. During the previous year, 149 more rigs were used to complete 2422 fewer wells and 11 million less feet of hole. The drilling of more wells and footage with fewer rigs has been a trend for a number of years. For example, an average of 315 more rigs was in operation during 1948 in completing 12,425 fewer wells and 72¾ million less feet of hole.

Footage drilled per rig has shown a tremendous increase in recent years. In drilling 209½ million feet of hole during 1954 with an average of 4635 rigs in operation, footage drilled during the year per rig amounted to 45,200 feet. This compared with the drilling of 41,478 feet per rig during 1953.

An upward trend in amount of footage drilled per rig has existed since the end of World War II. Nearly twice as much footage per rig was drilled in 1954 as in either 1946 or 1947, when the annual average was only a little in excess of 23,000 feet per rig.

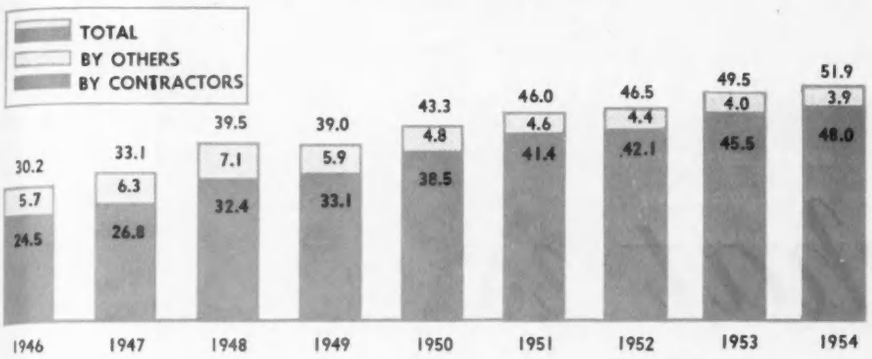
Drilling of 45,200 feet of hole per year per rig in operation represented a substantial growth in penetration rates. It constituted an increase of 94.6 percent over 1946 rates. In contrast, the drilling of 41,478 feet of hole per rig in 1953 represented an increase of 78.5 percent in penetration rates over 1946.

Average Wells and Footage Drilled Annually Per Rig in U. S.

YEAR	Wells Drilled	Footage Drilled	Average Rigs Operating	Wells Drilled Per Rig	Footage Drilled Per Rig
1938	29,127	90,585,158	3,799	**7.7**	**23,844**
1939	28,012	85,523,094	3,683	**7.6**	**23,221**
1940	31,149	96,182,605	4,193	**7.4**	**22,933**
1941	32,510	99,347,714	4,446	**7.3**	**22,345**
1942	21,990	67,903,053	3,041	**7.2**	**22,329**
1943	20,349	61,991,857	3,041	**6.7**	**20,385**
1944	25,786	84,378,457	4,190	**6.2**	**20,138**
1945	26,649	92,982,113	4,387	**6.1**	**21,195**
1946	30,230	101,124,813	4,353	**6.9**	**23,231**
1947	33,147	112,816,124	4,741	**7.0**	**23 796**
1948	39,477	136,709,153	4,950	**8.0**	**27,618**
1949	38,962	138,616,941	4,290	**9.1**	**32,312**
1950	43,307	159,761,732	4,517	**9.6**	**35,369**
1951	45,996	176,757,221	4,844	**9.5**	**36,490**
1952	46,509	188,378,059	4,857	**9.6**	**38,785**
1953	49,480	198,431,603	4,784	**10.3**	**41,478**
1954	51,902	209,501,937	4,635	**11.2**	**45,200**

WELLS DRILLED BY CONTRACTORS IN U. S.

(IN THOUSANDS)



Wells and Footage Drilled in U. S. by Contractors, by Years

Year	U. S. Totals		Indicated Work by Contractors		
	New Wells	Footage	% of U.S.	Wells	Footage
1941..	32,510	99,347,714	72	23,407	71,503,354
1942..	21,990	67,903,053	70	15,393	47,532,137
1943..	20,349	61,991,857	75	15,262	46,492,893
1944..	25,786	84,378,457	78	20,113	65,815,196
1945..	26,649	92,982,113	80	21,319	74,385,690
1946..	30,230	101,124,813	81	24,486	81,911,096
1947..	33,147	112,816,124	81	26,849	91,381,060
1948..	39,477	136,709,153	82	32,371	112,101,505
1949..	38,962	138,616,941	85	33,118	117,824,400
1950..	43,307	159,761,732	89	38,543	142,187,941
1951..	45,996	176,757,221	90	41,396	159,081,496
1952..	46,507	188,160,597	91	42,321	171,226,143
1953..	49,480	198,431,600	92	45,522	182,557,057
1954..	51,902	209,501,937	92.5	48,009	193,892,917

Drilling by Contractors . . . Continues tremendous growth. Contractors accounted for estimated 92.5 percent of all U. S. drilling during 1954.

THE CONTRACT drilling business in the U. S. has undergone tremendous growth in recent years. During 1954 contractors drilled about twice as many wells and more than double the amount of footage they drilled in 1946.

The growth in business done by contractors is due to the combined influence of many more wells being drilled in the U. S., and to contractors doing an increasing portion of the U. S. drilling.

It is estimated that drilling contractors accounted for 92.5 percent of the U. S. drilling during 1954. This represents a steadily enlarged percentage of the drilling. Ten years ago contractors were estimated to be doing but 78 percent of the drilling.

On the basis of performing 92.5 percent of the nation's drilling, contractors drilled 48,009 of the 51,902 wells drilled in the U. S. during 1954. On the same basis, they drilled nearly 194 million feet of hole. The previous year, when they did an estimated 92.0 percent of the drilling, contractors drilled 45,522 wells and 182.5 million feet of hole.

This amount of business is far ahead of preceding years. Contractors are estimated to have done only 81 percent of the U. S. drilling in 1946, which means they drilled but 24,486 wells and nearly 82 million feet of hole that year.

Contractor Rig Ownership . . . Large number of small firms owning rigs makes contractor drilling highly competitive business.

THE OIL INDUSTRY is able to drill in excess of 50,000 wells and more than 200 million feet of hole annually in the U. S. because of a large contract drilling business.

A recent survey by WORLD OIL was successful in determining the ownership of 3873 contractor rigs in the U. S. This indicates that contractors own slightly more than 4000 rigs. The figure is exclusive of rigs owned by producing companies not engaged in contract drilling work, and also is exclusive of service and workover rigs which sometimes do contract drilling work.

The contract drilling business is highly competitive. The survey showed that the 3873 rigs belonged to 889 different contracting firms and individuals, an average of only 4⅓ rigs per contractor. It was shown that 617 contractors engaged exclusively in rotary drilling owned 2387 rigs; that 171 contractors owned 677 rotaries and 443 cable tool rigs; and that 107 contractors engaged exclusively in cable tool drilling work owned 366 cable tool rigs.

The highly competitive nature of the rotary contract drilling business was demonstrated by the large number of small contractors. Three-fourths of the 782 contractors owning rotary rigs (including 171 who also owned cable tools) owned less than 5 rotaries each. The survey showed this breakdown on rotary rig ownership: only 11 contractors with more than 20 rigs each; 40 that owned from 10 to 18 rigs apiece; 153 contractors with 4 to 9 rigs each; 408 contractors that owned 2 to 4 rigs each, and 170 contractors owning only 1 rotary rig each.

Cable tool rigs also are mostly in the hands of small contractors. The survey showed only 13 contractors owned more than 10 cable tool rigs; 36 contractors owned 5 to 9 rigs each; 130 contractors owned 2 to 4 rigs apiece, and 99 contractors with but 1 cable tool rig each.

what is

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No great industry contributes so much to another as P.E.S.A. contributes to the great oil industry.

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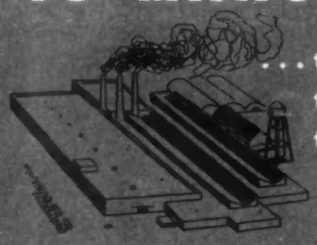
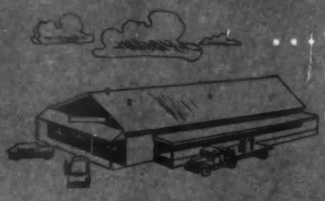


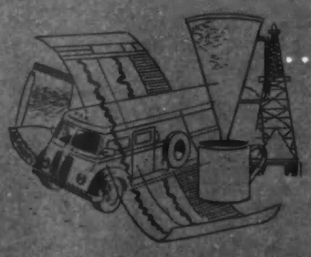
. . . that can make and give the service on *ALL* the equipment necessary for carrying on oil field operations.

35 SUPPLY COMPANIES



. . . that can supply *ALL* the equipment necessary for carrying on oil field operations . . . and in addition give field service and technical advice.

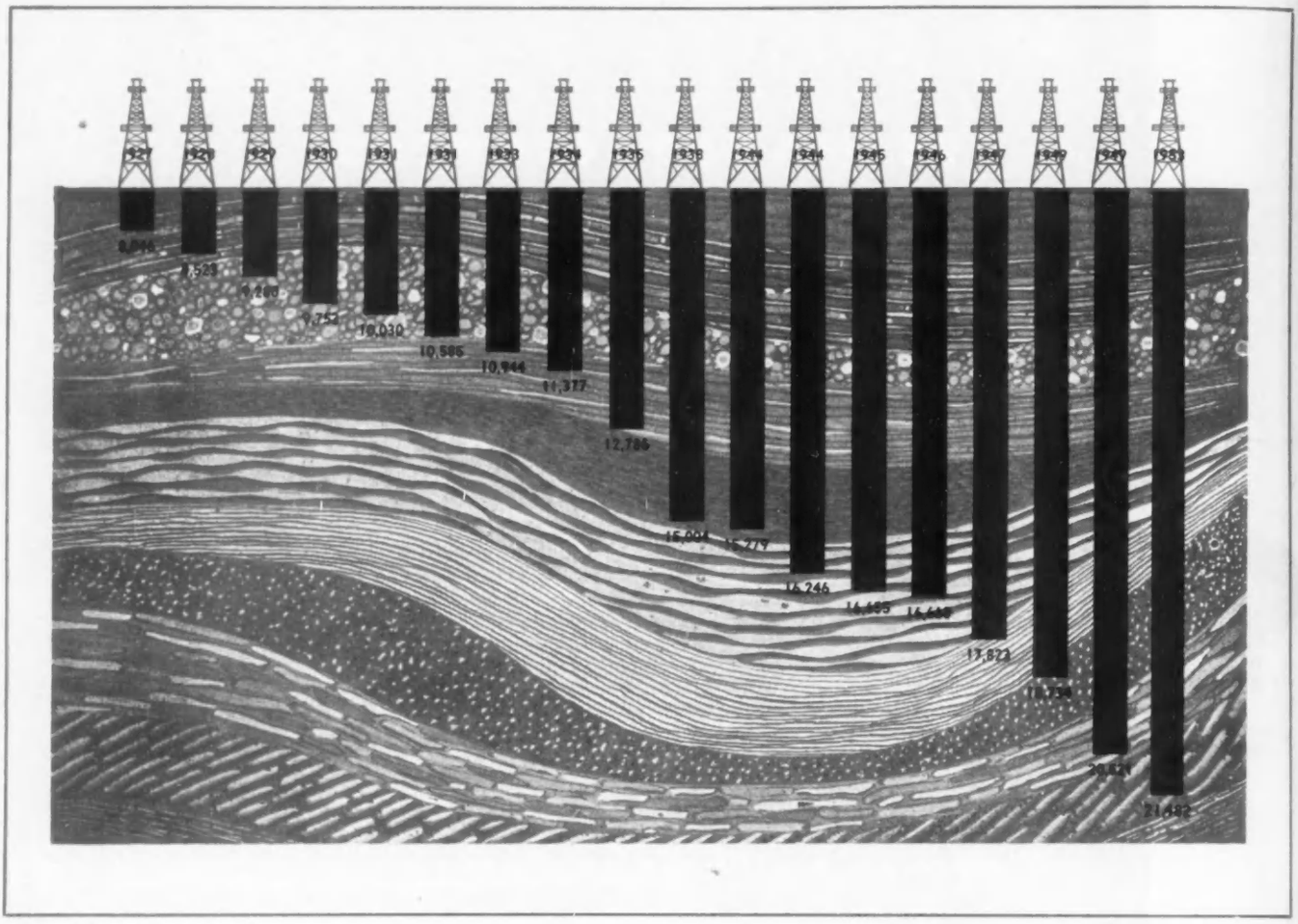
25 SERVICE COMPANIES



. . . that can give *ALL* the special services required for carrying on oil field operations . . . and in addition furnish advice on the highly technical problems connected with oil industry service.

P.E.S.A. *is an association of manufacturers, supply companies, and service companies* that can furnish ALL the equipment and services necessary to carry on oil field operations. These companies work together as a team to improve management skills, technological skills, service skills, and manufacturing skills—all for the purpose of accelerating to an even greater degree the magnificent progress already made in the production of oil.

OVER 9,000 ENGINEERS—The petroleum manufacture-supply-service industry is in the highest bracket of large industries regularly using a very high percentage of specially trained scientists, engineers, and technicians. Based on estimates made from a survey, there are over 9,000 divided as follows: **765 Research Scientists and Technologists; 1,840 Development Engineers for both product and service; 445 Metallurgists and Technicians in Metallurgy; 855 Engineers Engaged in Production, Inspection and Final Inspection; 5,583 Field and Service Engineers.**



Drilling Depth Records . . . New marks set in five areas as operators seek oil and gas at lower levels. California test is still deepest.

THE SEARCH for oil and gas went ever deeper during 1954, as depth records fell in at least five areas. The deep drilling trend established in 1953 continued in a big way. Wildcats, stepouts, and even some field wells in West Texas, the Texas Gulf Coast, New Mexico, Montana, and West Virginia, added extra joints of drill pipe to set new depth records.

California, 11 times winner of the world's deepest well title, clung to The Ohio Oil Company's KCL A 72-4 in Paloma field, Kern County, which spent one year and a million dollars fishing and testing during 1954—only to be abandoned on January 10 of 1955. It had reached its final depth of 21,482 feet in 1953.

The Paloma test is a monument to the industry. It acted as a proving ground for deep drilling equipment, mud, and modern drilling techniques, in the face of high pressure, salt water, 350-degree temperature, diamond hard formations, earthquakes, and the deepest fishing job ever recorded. The battle of engineering know-how whipped the mechanical side of deep drilling, only to be licked by the deep

Holders of Record as Deepest Test Drilled
(Includes both Dry and Producing Wells)

Year	WELL and LOCATION	Feet
1927	Chansler-Canfield-Midway Oil Company's Olinda 96, Olinda, California	8,046
1928	Texon Oil and Land Company's University 1-B, Big Lake, West Texas	8,523
1929	Shell Oil Company's Ness 1, Long Beach, California	9,280
1930	Standard Oil Company of California's Mascot 1, Midway, California	9,753
1931	Chansler-Canfield-Midway Oil Co.'s Hobson A-2, Rincon field, Ventura County, California	10,030
1931	Penn-Mex Fuel Company's Jardin 35, State of Vera Cruz, Mexico	10,585
1933	North Kettleman O. & G. Co.'s (later Union Oil's Lillis-Welch 1) Kettleman Hills, California	10,944
1934	General Petroleum Corporation's Berry 1, Belridge, Kern County, California	11,377
1935	Gulf Oil Corporation's McElroy 103, Gulf-McElroy, Upton County, West Texas	12,786
1938	Continental Oil Company's KCL A-2, Wasco, Kern County, California	15,004
1944	Phillips Petroleum Company's Ada Price 1, Wildcat, Pecos County, West Texas	15,279
1944	Standard Oil Company of California's KCL 20-13, South Coles Levee, Kern County, California	16,246
1945	Phillips Petroleum Company's Schoeps 3, Wildcat, Brazos County, Gulf Coast, Texas	16,655
1946	Pacific Western Oil Corp.'s National Royalties 1, Miramonte area, Kern County, California	16,668
1947	Superior Oil Company of California's Weller 51-11, Wildcat, Caddo County, Oklahoma	17,823
1949	Superior Oil Company of California's Limoneria 1, Wildcat, Ventura County, California	18,734
1949	Superior Oil Company of California's Unit 1, Wildcat, Sublette County, Wyoming	20,521
1953	Ohio Oil Co.'s Kern County Lands "A" 72-4, Paloma field, Kern Co., California, abandoned in Jan. 1955.	21,482

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geologic formations; leaving oil men to wonder if there is a depth below which oil can not be found.

Four and one-half years ago Superior Oil Company set a drilling record at 20,521 feet in Wyoming. This well was the first to reach 20,000 feet, and it also failed to find production. In 1952, a "tight hole" drilled in Mississippi by George Vasen reached 20,450 feet, and is carried on the scout books as still testing.

Other areas had significant deep drilling in 1954. Hunt Oil Company posted a record of 18,673 feet in Pecos County of West Texas and was still drilling.

Magnolia Petroleum Company went 400 feet deeper than the previous record and hung up a new record of 17,001 feet in Matagorda County on the Texas Gulf Coast.

Eddy County, New Mexico, received a record when Richardson and Bass drilled 16,705 feet. Records may not stand long in the Delaware Basin area, since exploratory drilling has only started in the vast basin.

Montana's 13,135-foot well drilled by Sun Oil Company gave further indication of deep drilling progress that resulted in a new record.

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West Virginia was still waiting on Hope Natural Gas Company's well in Wood County to learn how much it would exceed the 1941 depth record of 10,018 feet set by the same company in Harrison County.

As the records fell, only the 1928 record of 5022 feet for inactive New Jersey stood unchallenged.

In 1955, deeper drilling will continue its present pace, and new records may be forthcoming. Deep drilling continues in California, where deep sands await further exploration. Louisiana and its record deep producing formations will find the bit more frequently below 17,000 feet during 1955. The Anadarko basin of Oklahoma, too, will receive some deep play.

Humble's deep drilling in Grayson and Hansford Counties of the Texas Panhandle may be the scene of a deep development program, since production is deep.

Drilling Depth Records in U. S., by States and Districts, and by 1,000-Foot Intervals

STATE or DISTRICT	Feet	Year	WELL and LOCATION	Formation
California	21,482	1953	The Ohio Oil Company's KCL "A" 72-4, Paloma field, Kern County	L. Miocene
Wyoming	20,521	1949	Superior Oil Company of California Unit 1, Pacific Creek Area, Sublette County	U. Cretaceous
Mississippi	20,450	1952	George Vasen et al's Tung Oil Company of America 1, C SW NE 9-2s-11w, Stone County	
West Texas	18,673	Drlg.	Hunt Oil Company's Elisnore Royalty Company 47, Section 21, Blk B, GC&SF Survey, Pecos County	
South Louisiana	18,660	1952	Magnolia Petroleum Company's Ragley Lumber Co. 1-D, C SW NW 29-5s-7w, Allen Parish	
Southwest Texas	17,966	1951	Superior Oil Company of California's Minnie S. Welder 27, Portilla field, San Patricio County	Jackson
Oklahoma	17,823	1947	Superior Oil Company of California's Weller 51-11, Section 11-8n-12w, Caddo County	Pennsylvanian
Texas Gulf Coast	17,001	1954	Magnolia Petroleum Company's J. J. Le Tulle 1, Stephen F. Austin League, Matagorda County	Frio
New Mexico, Southeast	16,705	1954	Richardson and Bass' Harrison-Federal 1, Section 12-25s-30e, Eddy County	Devonian
East Texas	16,347	1949	Humble Oil & Refining Company's R. P. McWatters 1, Freestone County	Smackover
Alabama	15,729	1952	Humble Oil & Refining Company's Williams 1, Section 10-3n-2e, Clarke County	Jurassic
Florida	15,455	1947	Gulf Refining Company's State of Florida 1, Big Pine Key area, Monroe County	L. Cretaceous
Colorado	15,041	1951	Mountain Fuel Supply Company's Unit 1, Section 14-12n-100w, Hiawatha field, Moffat County	
North Louisiana	14,967	1947	Cotton Valley Operators Committee's A. G. Oliphant-Banks 2, Cotton Valley field, Webster Parish	Salt
North Texas and Panhandle	14,363	1953	Humble Oil & Refining Company's Mack Williams 1, Grayson County	Pennsylvanian
North Dakota	14,066	1953	Amerada Petroleum Corporation's Lars Kvam, Tr. 1-2, in 19-156n-95w, Williams County	
Utah	13,766	1949	Pacific Western Oil Corporation & Equity Oil Company's Unit 1, Section 33-21s-21e, Grand County	Pennsylvanian
New Mexico, Northwest	13,248	1952	Continental Oil Company's Government 1, SE SE SE 6-28n-2w, Rio Arriba County	
Montana	13,135	1954	Sun Oil Company et al's Beagle Land and Live Stock Company 1, NE SW SW 17-23n-59e, Richland County	Winnipeg
Idaho	12,844	1951	Phillips Petroleum Company & Utah Southern Oil Company's Unit 1, NW SW SW 10-14s-30e, Oneida County	
Arkansas	12,650	1952	Shell Oil Company's Browning-Burns Unit 1, Columbia County	Smackover
Pennsylvania	12,343	1951	The California Company's Bennett 1, Davidson Township, Sullivan County	U. Ordivician
Nevada	11,543	1952	Continental Oil Company's Unit 1, NW NW 32-20n-60e, White Pine County	Mississippian
New York	11,145	1953	New York State Natural Gas Company's Kesselring 1, Van Etten Township, Chemung County	
Michigan	11,012	1948	Ohio Oil Company & Pure Oil Company's Reinhardt 1, West Branch field, Ogemaw County	Cambro-Ord.
Washington	11,002	1947	Standard Oil Company of California's Alderwood Comm. 1, Snohomish County	
North Carolina	10,054	1946	Standard Oil Company of New Jersey's Cape Hatteras 1, Dare County	Granite
West Virginia	10,018	1941	Hope Natural Gas Company's C. S. Gribble 2-8517, Grant District, Harrison County	Gueenston
Virginia	9,936	1949	The California Company's Kipps Anthracite Coal Company 1, Montgomery County	Ordovician
South Dakota	9,348	1951	Shell Oil Company's J. T. Homme 1, Section 13-20n-12e, Perkins County	Granite
Oregon	9,263	1946	The Texas Company's Cooper Mountain 1, Washington County	
Nebraska	8,872	1952	Stanolind Oil & Gas Company's Lovercheck 3, Section 21-18n-55w, Banner County	Granite
Kansas	8,243	1947	Stanolind Oil & Gas Company's Feathers 1, 15-35s-33w, Seward County	Arbuckle
Maryland	8,165	1941	William Snee's Schartzer 1, Accident District, Garrett County	Helderburg
North Central Texas	7,980	1945	Humble Oil and Refining Company's C. H. Tompkins 1, T&P Railway Survey 169, Parker County	Ellenburger
Ohio	7,889	1933	Benedum and Trees' Knowlton 1, Independence Township, Washington County	Clinton
Illinois	7,682	1952	Superior Oil Company's H. C. Ford et al C-17, C SW SE 27-4s-14w, White County	Shakopee
Georgia	7,490	1944	Stanolind Oil & Gas Company's J. H. Pullen 1, Mitchell County	Cretaceous
Arizona	7,211	1952	Sinclair Oil & Gas Company's Navajo 1, Navajo County	Granite
Kentucky	6,686	1949	Pure-Ashland-I. B. Browning's M. L. Walker 1, 22-N-24, Webster County	Knox
Indiana	6,408	1946	Continental Oil Company's Cooper 1-D, Griffin field, Gibson County	Trenton
Tennessee	5,750	1947	The California Company's E. W. Beeler 1, Section 4-15s-29e, Giles County	Granite
Iowa	5,305	1930	Oil Development Company's Wilson 1, Page County	Cambrian
New Jersey	5,022	1928	W & K Oil Company's Well 1, Jackson Mills area, Ocean County	Granite
Missouri	4,740	1941	Strake Petroleum Company's T. P. Russell 1, Pemiscot County	Cambrian

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Unitized Substructure Conserves Space

One West Texas drilling contractor has utilized the space in the rig substructure and has cut down on the number of truck loads necessary to move equipment. One of the most practical ways of conserving space is that of building storage spaces and placing equipment in the unused portions of a heavy substructure base. The accompanying picture shows a West Texas rig that has been so designed with the water pump, engine, electric motor, junk box and auxiliary equipment stored in the rig substructure area, thus minimizing the number of truck loads.

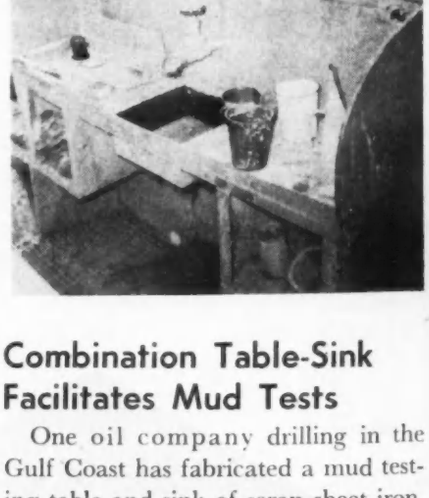
Special Brackets Support Drilling Line Spool

A convenient, time-saving method of handling the spool of extra rotary drilling line utilized by one drilling contractor consists of mounting it on a pair of brackets as shown. Turning on a two-to-three-inch pipe axle, the spool is swung into position for rapid rigging and for quickly unreeling the cable when needed.

When the cable is to be wound up, the spool is easily turned by one or two men standing on the ground beside it. Mounted in the open, on the roadway or the arch side of the rig, the spool may be hoisted easily in or out of its cradle. The new, full reel can be handled onto the support with a derrick line by means of surelegs and the winch line of the truck which brings in the replacement reel, or may be rolled on or across a pair of elevated timbers until it fits in its cradle. The brackets have been made of two-inch pipe and/or fashioned in the shape of a surveyor's tripod. The semi-circular yoke that forms the cradle for the axle may be raised or lowered as needed.

A reel mounted on brackets may be provided with a protector or shield which, overlapping the derrick floor, protects the wire rope from falling objects or dirt which could result in damage to the line coiled on the reel.

Any such protection as this will extend the life of the lubricant in the line and thus prevent premature aging and early failure when it is finally placed in service.



Combination Table-Sink Facilitates Mud Tests

One oil company drilling in the Gulf Coast has fabricated a mud testing table and sink of scrap sheet iron. Always a necessary item on a rig is a place to keep, test and wash mud testing equipment.

The compact unit was constructed by welding sheet metal together to form a table containing two working areas with a steel metal sink in between; a faucet connection and two

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storage bins below the table level. The framework is made of 1½-inch angle iron as shown.

A large hook is welded and reinforced into the back of the sink near the center of gravity of the unit to facilitate moves.

In order to put the unit into operation, connect the faucet to the water line and set the unit near the return flow line for accessibility to the mud to be tested.

Drilling Tender Uses Novel Sign Arrangement

A sign cut out by a welder, painted and bolted to the side of a boat used to haul crews and materials has been used effectively. The idea is also applicable for signs on toolhouses on rigs and other places.

Suitable pieces of tank iron can be used with rectangularly-cut block letters. Make cardboard templates to outline the letters, leaving a narrow strip to hold the insides of the cut-out

letters in place. Drill quarter-inch holes through the plates and the sides of the boat to hold the signs in place. In the instance of the sign for the boat, the boat was painted white and the letters showed clearly through the plates when the plates were painted red.

The truck tires shown are boat bumpers which are made by drilling a hole through the tire, attaching a chain, and latching in a keyhole for adjustment.

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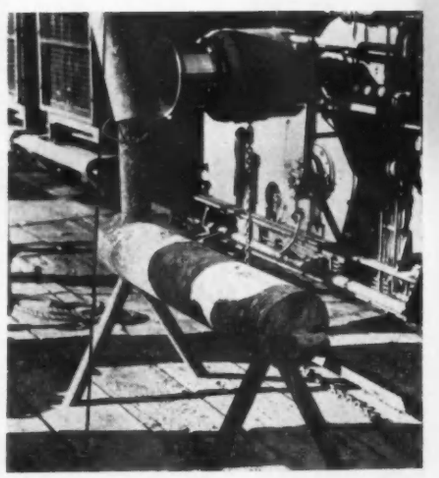

Make Rig Heater From Scrap Pipe

One West Texas drilling contractor has devised a rig heater out of scrap six-inch pipe which can be placed near the driller's position to keep driller and crew members warm. A six-inch or larger diameter pipe is welded horizontally on four two-inch pipe legs as shown. A short length of four-inch pipe is mounted vertically at the far extremity to provide a ventilating stack.

The large diameter pipe is closed at the far end and at the burner end a metal plate with openings is welded

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Mission builds two outstanding piston rods: The Mission File-Hard Satin Finish* Piston Rod and Mission Super-Chrome Piston Rods. Whichever one you select for your pumps, you can be sure that you will receive the longest rod life obtainable. Specify Mission to your supply store.

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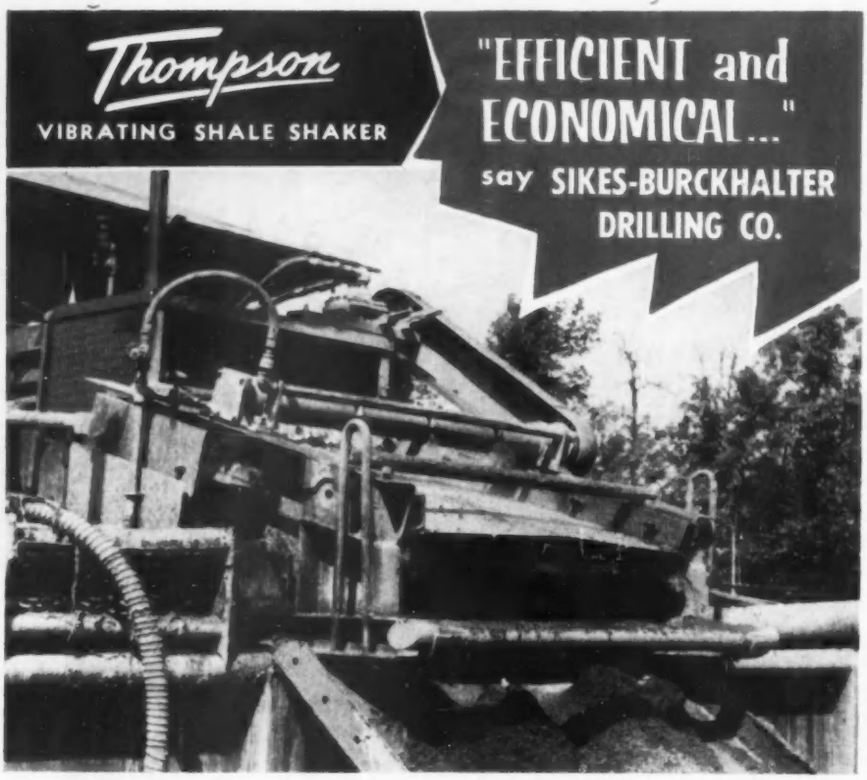
to provide air supply. A small diameter copper tubing runs from the field supply, (butane, diesel fuel, or natural gas) as seen running from the floor to the opening at the burner.

By turning a valve, fuel may be regulated and a match may be used to ignite the burner. Extreme caution must be exercised by crew members to avoid coming in direct contact with the burner during work.

Mud Storage House Has Hinged Roof and Side

One Gulf Coast drilling contractor has found that a mud storage house can greatly expedite mud handling if the side of the building is so constructed as to permit the raising of the side to form a roof. This contractor has devised a structure so that a portion of the side raises to form an overhanging protective roof while a lower portion of the side folds down to form a walkway so the crewman will not have to walk in the mud.

Since the sack mud may be entirely exposed, much faster handling of mud material is possible. This facilitates the loading and unloading of materials from the truck, as well as cutting and mixing of mud. The overhanging side (roof) protects the sack mud material inside from damage in handling and from inclement weather. Note that the mud hopper extends under the roof so the crewman will not be wet during poor weather conditions.



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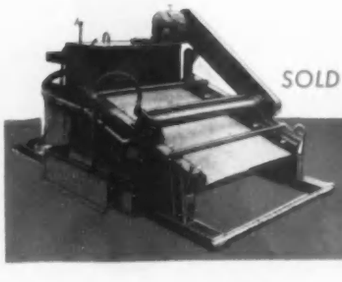

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IOWA PARK, TEXAS

Tool Devised to Remove Plugs From Oil Drums

One crewman on a Gulf Coast drilling barge has designed a handy tool to remove plugs of oil drums. The tool, made of scrap metal 1¾ inches wide, has a 12-inch handle. The tool end has a one-half-inch slot cut in the face of the tool to help grip the plug. The crewman found that knuckles could be saved if 2½-inch clearance was provided.

Wire Rope at Work—This is the drilling barge *Doc*, photographed at the edge of picturesque Sixmile Lake, Patterson, La. One of the finest, best-equipped barges ever built, it is owned and operated by Blackie Drilling Company of Franklin, La.

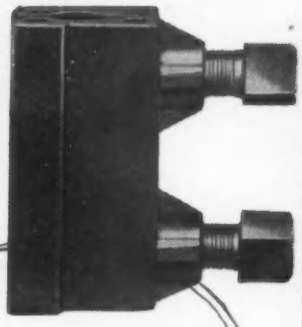
The *Doc* has a big, powerful drawworks equipped with 5,000 ft of Bethlehem Purple Strand rotary line—6x19 construction, 1¼-in. diam. This is strong rope, tremendously strong, and it enables the rig to handle very heavy strings of drill pipe. The wire rope is a key factor here, in one of the most demanding services known—a service where Purple Strand quality is always an assurance of efficient rope performance.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

PETROLEUM • MINING • CONSTRUCTION • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

#204

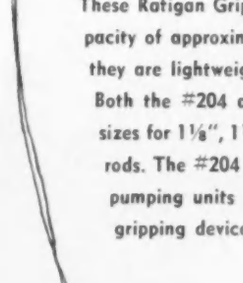


RATIGAN "POSITIVE ACTION"

"SURE GRIPS"

Extremely popular because of their positive gripping and holding power, Ratigan #50 and #204 Grips assure greater safety on the pumping well . . . once properly installed, you can almost forget them.

These Ratigan Grips have a holding capacity of approximately 53,000 lbs., yet they are lightweight for easy handling. Both the #204 and #50 are made in sizes for 1⅛", 1¼" and 1½" polished rods. The #204 is especially suited to pumping units which require a short gripping device.



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All Ratigan Products Are Sold By Leading Supply Stores Everywhere

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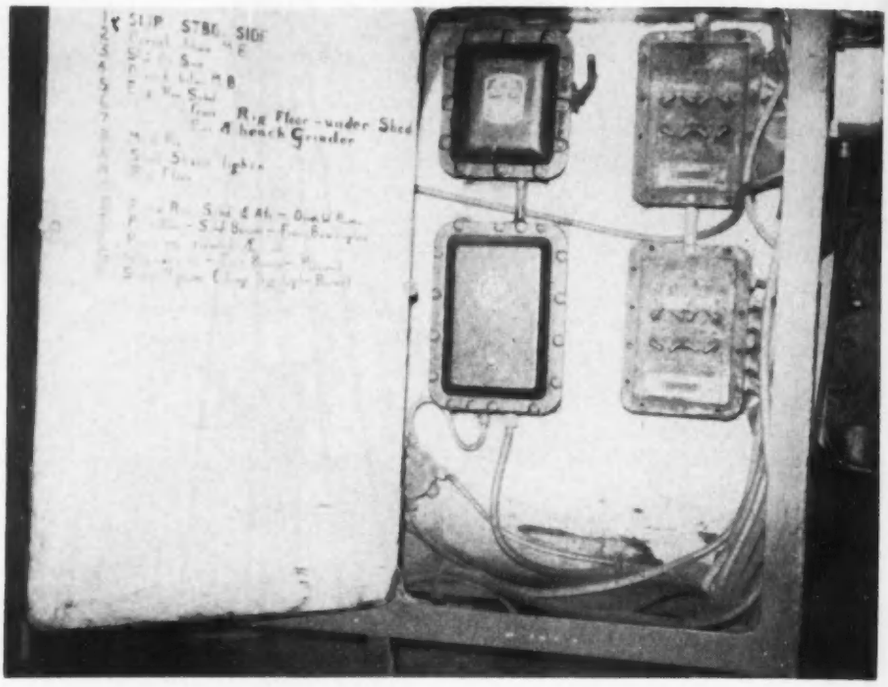

Identify Switches on Cabinet Door

One drilling company has numbered or lettered electrical switches to correspond with lettered identification on the inside of an electrical cabinet (multi-breaker load center) door.

This unit on rotary drilling barge D. B. Rhodes No. 647 has approximately 16 switches in the cabinet. In case of an electrical short to a pump, tool, derrick lights or other fixtures, the repairman, engineman, electrician, etc., needs only to look at the printing on the door to see what circuit he has to turn off or on. Thermal switches if used, require the resetting of switches that might have "kicked out" from overload. Numbering switches makes repairs safer. You can be sure the current is off in any given circuit to be worked on.

Carry Spare Tire Mounted on Tool Box

Laughlin and Porter Drilling Company of Midland, Texas, has devised a handy way of carrying the spare tire on pickup trucks, so that it will not be in the way of crew members. Tired of manhandling pickup tires in the back of a truck, Laughlin and Porter personnel welded a six-inch pipe upright to the top of a double opening tool box (which opens from either side) and to the hub of an old car wheel, thus providing an excellent tire bracket. The tire bracket is braced by steel fillets welded to the top of the tool box as shown.

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Artificial Lift . . . 24,686 oil producers will go on artificial lift in 1955.

By J. E. KASTROP,
WORLD OIL Staff

CONSERVATIVE ESTIMATES indicate that 24,686 producing oil wells will be placed on some form of artificial lift in the U. S. during 1955. This is only 753 wells below last year's total of 25,439 wells which went on artificial lift . . . an all-time high for the industry.

Even so, the level of wells in this category will remain substantially higher than in 1953, considered a banner year for the oil industry.

High rates of drilling, both in 1954 and forecasts for 1955, account for the large number of wells to go on artificial lift. Not only will a majority of new oil producing wells be equipped immediately after completion for rod pumping, hydraulic power pumping, gas lift or other electrical and mechanical means, but older flowing wells whose production rates have declined also will be similarly equipped.

Texas leads again in 1955 forecasts for the largest number of wells to go on artificial lift, with a predicted total of 8512 wells. This compares with last year's figure of 9236 wells put on artificial lift for the first time. Should the ratio of oil well completions to number of wells drilled remain as high as it did last year, it is not unreasonable to anticipate that the number of wells to go on articial lift will be higher than predicted.

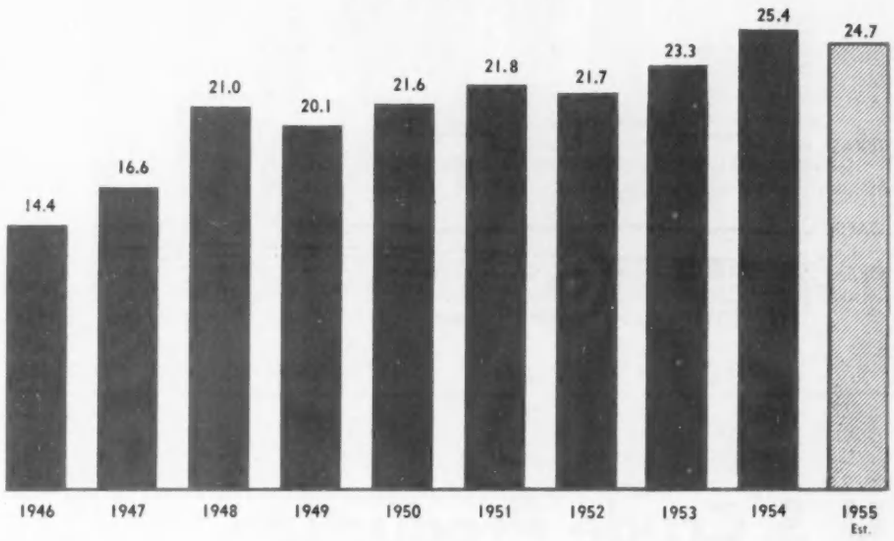
Oklahoma is second in the nation with an estimated 4060 wells to go on artificial lift this year, then Kansas with 2191 wells, and Illinois with 2014 wells.

California, formerly in third place, drops down to fourth in the nation with a forecast of 1646 wells to go on artificial lift.

There were 452,651 wells on artificial lift at the beginning of 1955, another record for the industry, compared with 442,353 wells at the beginning of 1954. This is a net gain of 9702 artificial lift wells in spite of the fact that a net of 15,192 wells were shut in or abandoned during the year . . . another all-time record.

TRENDS IN WELLS PUT ON ARTIFICIAL LIFT

(THOUSANDS OF WELLS)



Estimate of 1955 Artificial Lifting Equipment Needs

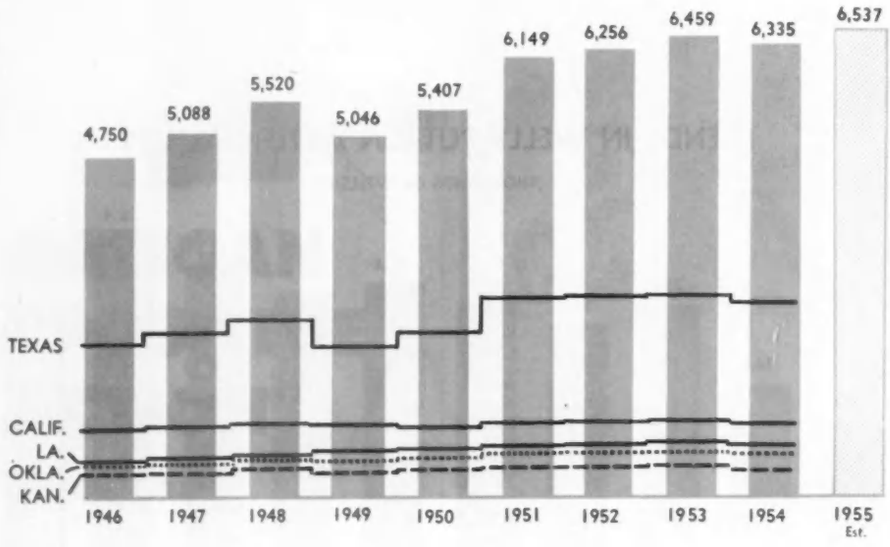
(Includes requirements for all types of pumping, hydraulic power, and gas lift units.)

STATE or DISTRICT	Est. Wells to go on Art. Lift in 1955	Wells Put on Pump or Lift in 1954	New Oil Wells Completed in 1954	No. Flowing Oil Wells End of 1954	Oil Wells on Artificial Lift End of 1954	Net Wells Shut on or Abandoned in 1954	Est. Maintenance Cost for All Art. Lift Wells in 1955 (Equipment Only)
Alabama	1	1	4	5	108	3	$ 10,573
Arkansas	378	385	319	270	3,925	159	497,794
California	1,646	1,767	1,703	1,770	31,303	414	12,850,400
Colorado	484	525	490	97	1,633	—10*	285,000
Illinois	2,014	1,782	1,787	10	35,155	1,044	3,833,172
Indiana	300	293	287	3	4,954	164	495,088
Kansas	2,191	2,140	2,138	31	34,523	898	4,309,899
Kentucky	490	560	560	.....	16,593	1	1,784,828
Louisiana	1,810	1,630	2,213	4,937	9,588	625	1,499,101
North Louisiana	1,528	1,383	1,380	808	7,611	268	1,063,625
South Louisiana	282	247	833	4,129	1,977	357	385,476
Michigan	163	150	217	190	3,842	171	521,892
Mississippi	144	134	146	319	1,547	123	312,467
Montana	132	112	171	110	3,641	—108*	563,464
Nebraska	234	217	217	.....	547	—28*	112,880
New Mexico	543	516	582	3,710	3,656	466	1,178,100
New York	266	317	316	.....	22,500	816	1,244,815
North Dakota	0	—6‡	168	353	88	—21*	9,680
Ohio	358	455	475	90	15,210	4,645	934,080
Oklahoma	4,060	4,167	4,907	2,860	64,551	572	8,056,301
Pennsylvania	287	323	323	.....	80,000	823	4,007,150
Texas	8,512	9,236	10,292	47,032	100,712	3,408	19,485,989
Dist. 1: South Central	692	668	709	381	4,530	248	742,672
Dist. 2: Middle Gulf	206	201	281	3,326	1,793	82	351,824
Dist. 3: Upper Gulf	1,003	865	904	5,119	6,545	400	1,070,992
Dist. 4: Lower Gulf-S.W.	561	574	568	5,369	6,403	356	1,129,427
Dist. 5: & 6: E. Cent. & N. E.	672	589	394	12,590	13,763	381	3,101,780
Dist. 7-B & 9: N. Cent. & N.	2,490	3,492	3,822	3,980	34,189	1,153	6,838,762
Dist. 7-C & 8: W. Cent. & W.	2,378	2,328	3,053	16,135	24,942	696	4,912,628
Dist. 10: Panhandle	510	519	561	132	8,547	92	1,337,904
Utah	12	10	7	1	81	—5*	10,527
West Virginia	70	65	65	.....	13,000	665	756,030
Wyoming	587	659	749	368	5,321	179	853,480
Other States†	4	2	4	.....	173	16	19,874
Total United States	24,686	25,439	28,138	62,150	452,651	15,192	63,582,584

† Florida, Missouri, Tennessee, Virginia, and South Dakota. * Net wells put back on production.
‡ Net Artificial Lift wells put back on flow status.

U. S. CRUDE OIL PRODUCTION, BY YEARS AND LEADING STATES

(THOUSANDS OF BARRELS DAILY)



U. S. Crude Production . . . Output due to gain 202,000 barrels daily in face of import hike.

THE U. S. WILL produce an estimated 2,386,000,000 barrels of crude in 1955. That total output, averaging 6,537,000 barrels daily, will be worth approximately $6,585,000,000 at the wells, on the basis of present prices.

So domestic producers have begun a year in which they are expected to produce 202,173 barrels a day more than in 1954—a 3.1 percent rise—which will bring them $204 million more by year's end than the $6,381,000,000 worth of crude produced during 1954. That is, if the current $2.76 a barrel average price at the well holds throughout the year.

To meet the expected increase in demand for petroleum products, U. S. operations will have to shift into a higher gear despite an expected 5.9 percent rise in total imports.

U. S. crude production of 6,334,827 barrels daily average in 1954 was 130,921 barrels a day or 2.0 percent less than the output of 6,465,748 barrels daily in 1953. The curtailment of crude production was made in adjusting supply to the relatively weak demand for oils in 1954, which was only slightly above 1953. The domestic supply situation in 1954 was depressed also by excessive product stocks at the beginning of the year and the necessity of curtailing both crude production and refinery runs. However, crude runs to stills were curtailed only about 0.7 percent, which was less than the 2.0 percent reduction of crude production; and stocks of domestic crude were drawn down by about 15 million barrels in 1954 in feeding the refineries.

U. S. Crude Oil Production

Source: U. S. Bureau of Mines, except Nov. and Dec., 1953, from American Petroleum Institute.

(THOUSANDS OF BARRELS)

Year	Total	Daily	Year	Total	Daily
.....	.....	....	1936..	1,099,687	3,013
.....	.....	....	1937..	1,279,160	3,505
1918...	355,928	975	1938..	1,214,355	3,327
1919...	378,367	1,037	1939..	1,264,962	3,466
1920...	442,929	1,213	1940..	1,353,214	3,707
1921...	472,183	1,294	1941..	1,402,228	3,842
1922...	557,531	1,528	1942..	1,386,645	3,799
1923...	732,407	2,007	1943..	1,505,613	4,125
1924...	713,940	1,956	1944..	1,677,904	4,584
1925...	763,743	2,092	1945..	1,713,655	4,695
1926...	770,874	2,112	1946..	1,733,939	4,750
1927...	901,129	2,469	1947..	1,856,987	5,088
1928...	901,474	2,469	1948..	2,020,185	5,520
1929...	1,007,323	2,760	1949..	1,841,940	5,046
1930...	898,011	2,460	1950..	1,973,574	5,407
1931...	851,081	2,332	1951..	2,247,711	6,158
1932...	785,159	2,151	1952..	2,289,836	6,256
1933...	905,656	2,481	1953..	2,359,998	6,466
1934...	908,065	2,488	1954..	2,312,212	6,335
1935...	996,596	2,730	1955 Est...	2,386,000	6,537

The five leading crude producing states in 1954 accounted for 5,167,835 barrels per day, or 81.57 percent of total U. S. daily output. These states are: Texas, which yielded 42.37 percent of the national total; California, 15.40 percent; Louisiana, 10.60 percent; Oklahoma, 8.06 percent, and Kansas, 5.14 percent. Of the five, only Kansas recorded an increase in production in 1954, having averaged 325,597 barrels daily, which was 9819 barrels or 3.1 percent above 1953.

Average decline in production of the top four states amounted to 4.75 percent. Greatest decline was in Oklahoma, where output dropped 8 percent—from 554,986 barrels daily in 1953 to 510,748 in 1954.

California, the nation's second largest producing state, reported a decrease of 2.4 percent, or 24,145 barrels a day, from 1953 yield of 999,816 daily.

Louisiana produced 671,575 barrels daily in 1954, a decline of 28,951 barrels or 4.1 percent from 1953. North Louisiana declined 2.7 percent and South Louisiana 4.4 percent.

Texas, again the nation's No. 1 producer, averaged 2,684,244 barrels daily, down 4.4 percent or 123,372 barrels, from 1953. Of the ten Texas districts, five in West Texas, Coastal Texas, and Eastern Texas showed decreases, which more than canceled increases in the other five districts of central and northern Texas.

Mountain states up. Outstanding among the states showing increases in crude production in 1954 was Colorado. That state averaged 115,441 barrels daily in 1954, a gain of 26,863 barrels or 30.3 percent over 1953. All other Rocky Mountain states also produced substantially more crude in 1954 than in 1953, as markets were enlarged through pipe line and refinery construction. There were increases of 15.8 percent for Montana, 17.9 percent for Nebraska, 13.0 percent for North Dakota, 4.4 percent for Utah, and 9.9 percent or 23,069 barrels daily for Wyoming, which rose to 255,721 daily. Meanwhile, the first recorded production occurred in two new producing states, both in the Rocky

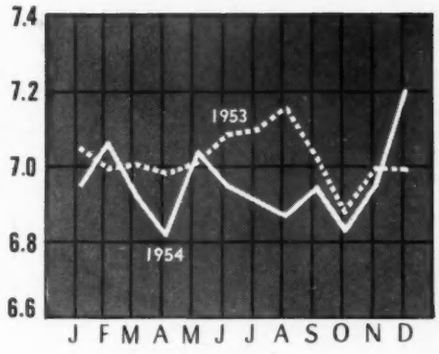
Mountain region. They were South Dakota and Nevada.

Along with Kansas and the Rocky Mountain states, the Middle Western states of Illinois, Kentucky, Missouri, and Tennessee also showed increases, although Indiana registered a decrease. Illinois output increased 12.9 percent, or over 20,000 barrels daily, in averaging 182,107 barrels per day in 1954.

Other states that produced more crude in 1954 than in 1953 included Florida, New Mexico, Ohio, and Virginia.

Production by Months

(Millions of Barrels Daily)



There were decreases in 1954 in not only the prominent producing states of Texas, California, Oklahoma, Louisiana, and in Indiana, but also in Alabama, Arkansas, Mississippi, Michigan, New York, Pennsylvania, and West Virginia.

The nation's cumulative production to Jan. 1, 1955, amounted to 50,128,845,000 barrels, to which Texas and California together had contributed 27,814,459,000 barrels, or 55.49 percent.

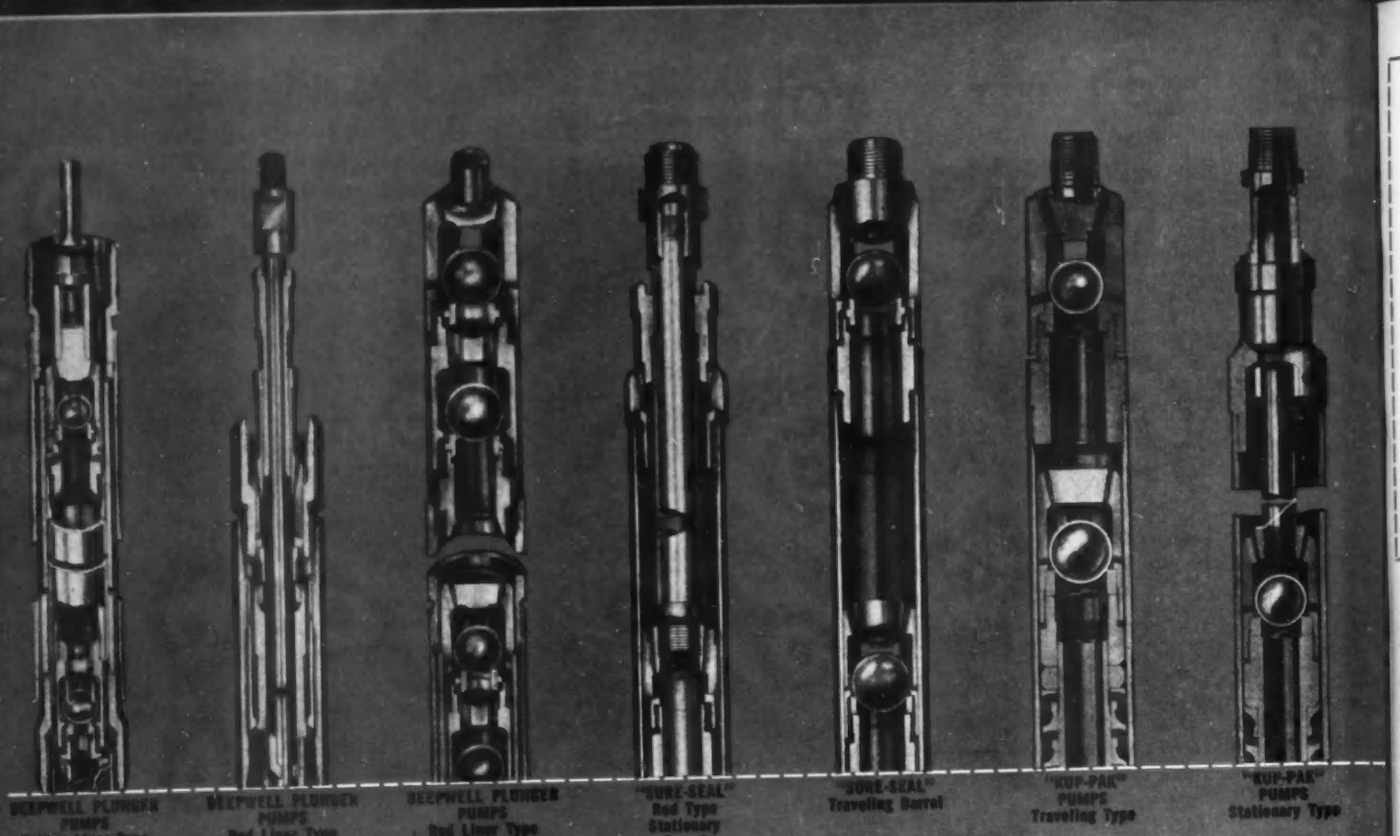
(SEE TABLES, PAGES 156-158.)

U. S. Crude Oil Production, by States and Districts, 1953, 1954, and Cumulative Since Beginning

(Sources: U. S. Bureau of Mines, except Nov. and Dec., 1954, from API; Tex. districts from Tex. R.R. Com., and La. district cumulatives from other sources.)

STATE and DISTRICT	Annual Production (Thousands Bbls.)		Daily Average Production (Actual Bbls.)			Year's Production As % of U.S.		Cumulative Prod. to Jan. 1, 1955 (Thousands Bbls.)	
	1953	1954	1953	1954	% Diff. '53-'54	1953	1954	Total	As % of U.S.
Alabama	1,694	1,573	4,641	4,310	— 7.1	0.07	0.06	8,229	0.01
Arkansas	29,681	28,823	81,318	78,967	— 2.9	1.26	1.25	913,844	1.82
California	364,933	356,120	999,816	975,671	— 2.4	15.46	15.40	10,054,662	20.06
Colorado	32,331	42,136	88,578	115,441	+ 30.3	1.37	1.82	279,681	0.56
Florida	537	550	1,471	1,507	+ 2.4	0.02	0.03	3,854	0.01
Illinois	58,886	66,469	161,332	182,107	+ 12.9	2.50	2.87	1,752,003	3.49
Indiana	13,013	11,109	35,652	30,436	— 14.6	0.55	0.48	247,982	0.50
Kansas	115,259	118,843	315,778	325,597	+ 3.1	4.88	5.14	2,562,954	5.11
Kentucky	11,618	13,755	31,830	37,685	+ 18.4	0.49	0.60	301,159	0.60
*Louisiana	255,692	245,125	700,526	671,575	— 4.1	10.84	10.60	3,538,043	7.06
North Louisiana	41,702	40,557	114,252	111,115	— 2.7	1.77	1.75	959,021	1.91
South Louisiana	213,990	204,568	586,274	560,460	— 4.4	9.07	8.85	2,247,746	4.48
Michigan	12,284	12,001	33,655	32,879	— 2.3	0.52	0.52	373,710	0.74
Mississippi	35,425	33,607	97,055	92,074	— 5.1	1.50	1.45	426,440	0.86
Missouri	26	69	71	189	+165.4	.....	.....	718	.....
Montana	11,630	13,464	31,863	36,887	+ 15.8	0.49	0.59	211,909	0.42
Nebraska	6,257	7,380	17,143	20,219	+ 17.9	0.27	0.32	26,239	0.05
Nevada	.....	35	.....	96	.....	.....	.....	35	.....
New Mexico	70,394	74,773	192,860	204,858	+ 6.2	2.98	3.23	938,962	1.87
Southeast New Mexico	69,639	74,071	190,792	202,934	+ 6.4	2.95	3.20	925,587	1.84
Northwest New Mexico	755	702	2,068	1,924	— 7.0	0.03	0.03	13,375	0.03
New York	3,800	3,408	10,411	9,337	— 10.3	0.16	0.15	192,715	0.39
North Dakota	5,183	5,858	14,200	16,049	+ 13.0	0.22	0.25	12,615	0.02
Ohio	3,550	3,825	9,726	10,479	+ 7.7	0.15	0.17	634,864	1.27
Oklahoma	202,570	186,423	554,986	510,748	— 8.0	8.59	8.06	7,027,761	14.02
Pennsylvania	10,669	8,934	29,230	24,477	— 16.3	0.45	0.39	1,167,344	2.33
South Dakota	.....	35	.....	96	.....	.....	.....	35	.....
Tennessee	13	15	36	41	+ 15.4	.....	.....	561	.....
*Texas	1,024,780	979,749	2,807,616	2,684,244	— 4.4	43.42	42.37	17,759,797	35.43
Dist. 1: South Central	13,779	15,527	37,751	42,540	+ 12.7	0.58	0.67	341,546	0.68
Dist. 2: Middle Gulf	56,792	52,155	155,594	142,890	— 8.2	2.41	2.25	783,120	1.56
Dist. 3: Upper Gulf	171,238	160,003	469,145	438,364	— 6.6	7.26	6.92	3,306,945	6.60
Dist. 4: Lower Gulf-S.W.	94,974	88,617	260,203	242,786	— 6.7	4.03	3.84	1,297,746	2.59
Dist. 5: East Central	17,774	16,133	48,696	44,200	— 9.2	0.75	0.69	583,453	1.16
Dist. 6: Northeast	137,219	123,812	375,942	339,211	— 9.8	5.82	5.36	3,130,343	6.24
Dist. 7-B: North Central	41,584	46,561	113,929	127,564	+ 12.0	1.76	2.01	639,740	1.28
Dist. 7-C: West Central	60,422	65,656	165,540	179,879	+ 8.7	2.56	2.84	473,866	0.94
Dist. 8: West	326,685	311,196	895,027	852,592	— 4.8	13.84	13.46	3,740,059	7.46
Dist. 9: North	66,637	68,420	182,567	187,452	+ 2.7	2.82	2.96	1,368,088	2.73
Dist. 10: Panhandle	27,571	30,300	75,537	83,014	+ 9.9	1.17	1.31	789,754	1.57
Utah	1,807	1,887	4,951	5,170	+ 4.4	0.08	0.08	8,612	0.02
Virginia	10	14	28	38	+ 40.0	.....	.....	237	.....
West Virginia	3,038	2,894	8,323	7,929	— 4.7	0.13	0.13	452,251	0.90
Wyoming	84,918	93,338	232,652	255,721	+ 9.9	3.60	4.04	1,231,057	2.45
Unclassified	.....	.....	.....	.....	.....	.....	.....	572	0.01
Total United States	2,359,998	2,312,212	6,465,748	6,334,827	— 2.0	100.00	100.00	50,128,845	100.00

* Data on Louisiana and Texas by districts are from various sources and do not agree with state totals, which are on Bureau of Mines basis.



DEEPWELL PLUNGER PUMPS
Tubing Liner Type

DEEPWELL PLUNGER PUMPS
Rod Liner Type
Stationary Barrel

DEEPWELL PLUNGER PUMPS
Rod Liner Type
Traveling Barrel

"SURE-SEAL"
Rod Type
Stationary Barrel

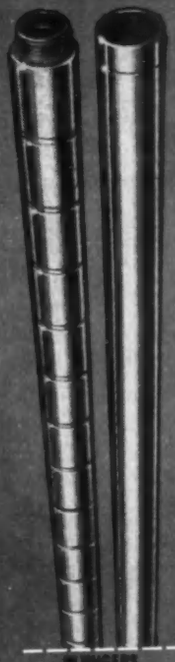
"SURE-SEAL"
Traveling Barrel

"KUP-PAK" PUMPS
Traveling Type

"KUP-PAK" PUMPS
Stationary Type

STANDARD STUFFING BOX

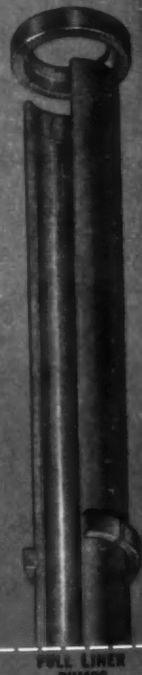
SUCKER ROD COUPLINGS



PLUNGERS
Grooved Plain

"TRIAX" PUMPS
Traveling Barrel
Three Tube Bottom Cup
Hold-Down Type

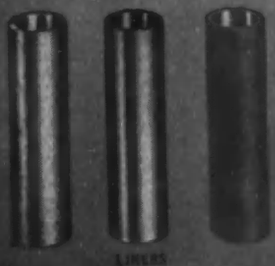
TWO ZONE PUMPS



FULL LINER PUMPS

"SURE-HOLD" VALVE PULLER

SEATS AND BALLS
Ribbed Flat



LINERS
Regular Cast Iron
Hardened Cast Iron
"Duex" (Bi-metal)

SHORT LIFT CAGES

Distributors in oil fields throughout the world

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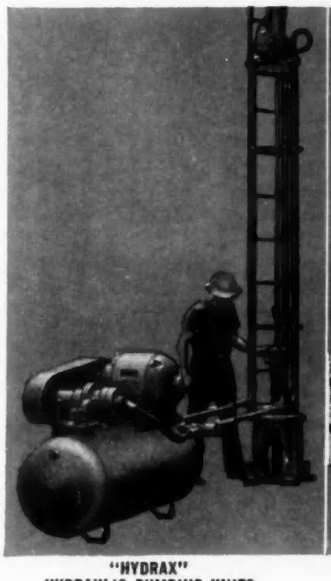

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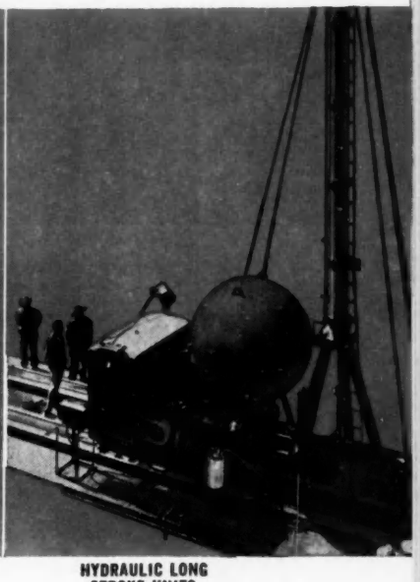

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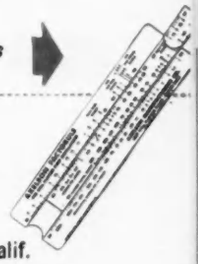

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United States Crude Oil Production, By States, By Years (Part 1)

Data in thousands of barrels; from *Mineral Resources and Minerals Yearbook*, except where otherwise indicated in footnotes.

Year	Alabama	Arkansas	California	Colorado	Florida	Illinois	Indiana	Kansas	Kentucky	Louisiana	Michigan	Mississippi	Missouri	Montana	Nebraska	Nevada	New Mexico
1875	.....	.....	.....	.....	.....	.....	.....	.....	[E]	.....	.....	.....	.....	.....	.....	.....	.....
1876	.....	.....	12	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1877	.....	.....	13	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1878	.....	.....	15	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1879	.....	.....	20	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1880	.....	.....	40	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1881	.....	.....	100	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1882	.....	.....	129	.....	.....	.....	.....	.....	[G] [E]	.....	.....	.....	.....	.....	.....	.....	.....
1883	.....	.....	143	.....	.....	.....	.....	.....	[G5]	.....	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	262	.....	.....	.....	.....	.....	[G4]	.....	.....	.....	.....	.....	.....	.....	.....
1885	.....	.....	325	.....	.....	.....	.....	.....	[G5]	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	377	.....	.....	.....	.....	.....	[G5]	.....	.....	.....	.....	.....	.....	.....	.....
1887	.....	.....	678	76	.....	.....	.....	.....	[G5]	.....	.....	.....	.....	.....	.....	.....	.....
1888	.....	.....	690	298	.....	.....	.....	.....	[G5]	.....	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	303	317	.....	1	33	1	[G5]	.....	.....	.....	[H]	.....	.....	.....	.....
1890	.....	.....	307	369	.....	1	64	1	[G6]	.....	.....	.....	[H]	.....	.....	.....	.....
1891	.....	.....	324	666	.....	1	137	1	[G9]	.....	.....	.....	[H]	.....	.....	.....	.....
1892	.....	.....	385	824	.....	1	698	5	[G7]	.....	.....	.....	[H]	.....	.....	.....	.....
1893	.....	.....	470	594	.....	1	2,335	18	[G3]	.....	.....	.....	[H]	.....	.....	.....	.....
1894	.....	.....	706	516	.....	[H]	3,689	40	[G2]	.....	.....	.....	[H]	.....	.....	.....	.....
1895	.....	.....	1,209	438	.....	[H]	4,386	44	[G2]	.....	.....	.....	[H]	.....	.....	.....	.....
1896	.....	.....	1,253	361	.....	[H]	4,681	114	[G2]	.....	.....	.....	[H]	.....	.....	.....	.....
1897	.....	.....	1,903	385	.....	1	4,122	81	[G] [H]	.....	.....	.....	[H]	.....	.....	.....	.....
1898	.....	.....	2,257	444	.....	[H]	3,731	72	[G6]	.....	.....	.....	[H]	.....	.....	.....	.....
1899	.....	.....	2,642	390	.....	[H]	3,848	70	[G18]	.....	.....	.....	[H]	.....	.....	.....	.....
1900	.....	.....	4,325	317	.....	[H]	4,874	75	[G62]	.....	[J]	.....	[J2]	.....	.....	.....	.....
1901	.....	.....	8,787	461	.....	[H]	5,757	179	[G137]	.....	[J]	.....	[J2]	.....	.....	.....	.....
1902	.....	.....	13,984	397	.....	[H]	7,481	332	[G185]	549	[J]	.....	[J1]	.....	.....	.....	.....
1903	.....	.....	24,382	484	.....	.....	9,186	932	[G554]	918	[J]	.....	[J3]	.....	.....	.....	.....
1904	.....	.....	29,649	501	.....	.....	11,339	4,251	[G998]	2,959	[J]	.....	[J3]	.....	.....	.....	.....
1905	.....	.....	33,428	376	.....	181	10,964	[I]3,750	[G]1,217	8,910	[J]	.....	[J3]	.....	.....	.....	.....
1906	.....	.....	33,099	328	.....	4,397	7,674	[I]3,627	[G]1,214	9,077	[J]	.....	[J3]	.....	.....	.....	.....
1907	.....	.....	39,748	332	.....	24,282	5,128	2,410	[G]821	5,000	[J]	.....	[J4]	.....	.....	.....	.....
1908	.....	.....	44,855	380	.....	33,686	3,283	1,801	728	5,789	[J]	.....	[J]15	.....	.....	.....	.....
1909	.....	.....	55,472	311	.....	30,898	2,296	1,264	639	3,060	[J]	.....	[J6]	.....	.....	.....	.....
1910	.....	.....	73,011	240	.....	33,143	2,160	1,128	469	6,841	[J]	.....	[J4]	.....	.....	.....	.....
1911	.....	.....	81,134	227	.....	31,317	1,695	1,279	472	10,721	[J]	.....	[J8]	.....	.....	.....	.....
1912	.....	.....	87,269	206	.....	28,602	970	1,593	484	9,263	[K]	.....	.....	.....	.....	.....	.....
1913	.....	.....	97,788	189	.....	23,894	956	2,375	525	12,499	[K]	.....	[K]	.....	.....	.....	[K]
1914	.....	.....	99,775	223	.....	21,920	1,336	3,104	503	14,309	[K]	.....	[K]	.....	.....	.....	.....
1915	.....	.....	86,592	208	.....	19,042	876	2,823	437	18,192	[K]	.....	[K]	.....	.....	.....	.....
1916	.....	.....	90,952	197	.....	17,714	769	8,738	[L]1,202	15,248	[K]	.....	[K]	45	.....	.....	.....
1917	.....	.....	93,878	121	.....	15,777	760	36,536	[L]3,088	11,392	[K]	.....	.....	100	.....	.....	.....
1918	.....	.....	97,532	143	.....	13,366	878	45,451	[L]4,368	16,043	[K]	.....	.....	69	.....	.....	.....
1919	.....	.....	101,183	121	.....	11,960	972	33,048	9,278	17,188	[K]	.....	[K]	90	.....	.....	[K]
1920	.....	[K]	103,377	111	.....	10,774	945	39,005	8,738	35,714	.....	.....	[K]	340	.....	.....	[K]
1921	.....	10,473	112,600	108	.....	10,043	1,158	36,456	9,013	27,103	.....	.....	[K]	1,509	.....	.....	[K]
1922	.....	12,712	138,468	97	.....	9,383	1,087	31,766	8,973	35,376	.....	.....	[K]	2,449	.....	.....	[K]
1923	.....	36,610	262,876	86	.....	8,707	1,043	28,250	8,069	24,919	.....	.....	[K]	2,782	.....	.....	[K]
1924	.....	46,028	228,933	445	.....	8,081	935	28,836	7,407	21,124	.....	.....	.....	2,815	.....	.....	98
1925	.....	77,398	232,492	1,226	.....	7,863	829	38,357	6,759	20,272	4	.....	.....	4,091	.....	.....	1,060
1926	.....	58,332	224,673	2,768	.....	7,760	808	41,498	6,274	23,201	94	.....	.....	7,727	.....	.....	1,666
1917	.....	40,005	231,196	2,831	.....	6,994	852	41,069	6,719	22,818	439	.....	.....	5,058	.....	.....	1,226
1928	.....	32,096	231,811	2,774	.....	6,462	1,052	38,596	7,359	21,847	594	.....	.....	4,015	.....	.....	943
1929	.....	24,917	292,534	2,358	.....	6,319	981	42,813	7,775	20,554	4,528	.....	.....	3,980	.....	.....	1,830
1930	.....	19,702	227,329	1,656	.....	5,736	994	41,638	7,389	23,272	3,911	.....	.....	3,349	.....	.....	10,189
1931	.....	14,791	188,830	1,545	.....	5,039	840	37,018	6,456	21,804	3,789	.....	.....	2,830	.....	.....	15,227
1932	.....	12,051	178,128	1,136	.....	4,673	806	34,848	6,287	21,807	6,910	.....	[K]	2,457	.....	.....	12,455
1933	.....	11,686	172,010	919	.....	4,244	737	41,976	4,608	25,168	7,942	[K]	[K]	2,273	.....	.....	14,116
1934	.....	11,182	174,305	1,139	.....	4,479	838	46,482	4,860	32,869	10,603	[K]	[K]	3,603	.....	.....	16,864
1935	.....	11,008	207,832	1,560	.....	4,322	777	54,843	5,258	50,330	15,776	[K]	[K]	4,603	.....	.....	20,483
1936	.....	10,469	214,773	1,650	.....	4,475	822	58,317	5,633	80,491	11,928	.....	[K]	5,868	.....	.....	27,223
1937	.....	11,764	238,521	1,605	.....	7,499	844	70,761	5,484	90,924	16,628	.....	[K]	5,805	.....	.....	38,854
1938	.....	18,180	249,749	1,412	.....	24,075	995	60,064	5,821	95,208	18,745	.....	[K]	4,946	.....	.....	35,759
1939	.....	21,238	224,354	1,404	.....	94,912	1,711	60,703	5,621	93,646	23,462	107	40	5,960	2	.....	37,637
1940	.....	25,775	223,881	1,626	.....	147,647	4,978	66,139	5,188	103,584	19,753	4,400	44	6,728	276	.....	39,129
1941	.....	26,327	230,263	2,150	.....	132,393	7,411	83,242	4,762	115,908	16,359	15,327	47	7,526	1,898	.....	39,569
1942	.....	26,628	248,326	2,199	.....	106,391	6,743	97,636	4,534	115,785	21,754	28,833	36	8,074	1,237	.....	31,544
1943	.....	27,600	284,188	2,320	4	82,260	5,283	106,178	7,883	123,592	20,768	18,807	36	7,916	635	.....	38,896
1944	43	29,418	311,793	3,083	12	77,413	5,118	98,762	9,621	129,645	18,490	16,337	45	8,647	417	.....	39,555
1945	181	28,613	326,482	5,036	30	75,094	4,868	96,415	10,325	131,051	17,267	19,062	45	8,420	305	.....	37,351
1946	380	28,375	314,713	11,856	57	75,297	6,726	97,218	10,578	143,669	17,074	24,298	51	8,825	293	.....	36,814
1947	396	29,948	333,132	15,702	259	66,459	6,095	105,132	9,397	160,128	16,215	34,925	55	8,742	229	.....	40,926
1948	466	31,682	340,074	17,878	290	64,808	6,974	110,908	8,801	181,458	16,871	45,761	44	9,382	215	.....	47,969
1949	462	29,986	332,942	23,587	441	64,501	9,696	101,868	8,803	190,826	16,517	37,966	49	9,118	330	.....	47,645
1950	735	31,108	327,607	23,303	487	62,028	10,699	107,586	10,381	208,965	15,826	38,236	32	8,109	1,547	.....	47,367
1951	1,020	29,798	354,561	27,823	596	60,243	11,100	114,522	11,622	232,281	13,927	37,039	24	8,958	2,588	.....	52,719
1952	1,279	29,440	359,450	30,381	591	60,089	12,037	114,807	11,918	243,929	13,251	36,310	21	9,606	2,660	.....	58,681
1953	1,694	29,681	364,933	32,331	537	58,886	13,013	115,259	11,618	255,692	12,284	35,425	26	11,630	6,257	.....	70,394
1954	1,573	28,823	356,120	42,136	550	66,469	11,109	118,843	13,755	245,125	12,001	33,607	69	13,464	7,380	35	74,773
Total	8,229	[A] 913,844	10,054,662	279,681	3,854	1,752,003	247,982	2,562,954	301,159	3,538,043	373,710	426,440	718	211,909	26,239	35	938,962

[A] Utah prod. est. at 3,650 bbls. in 1939; 3,126 bbls. in 1940; and 189,726 bbls. cum. through 1940.

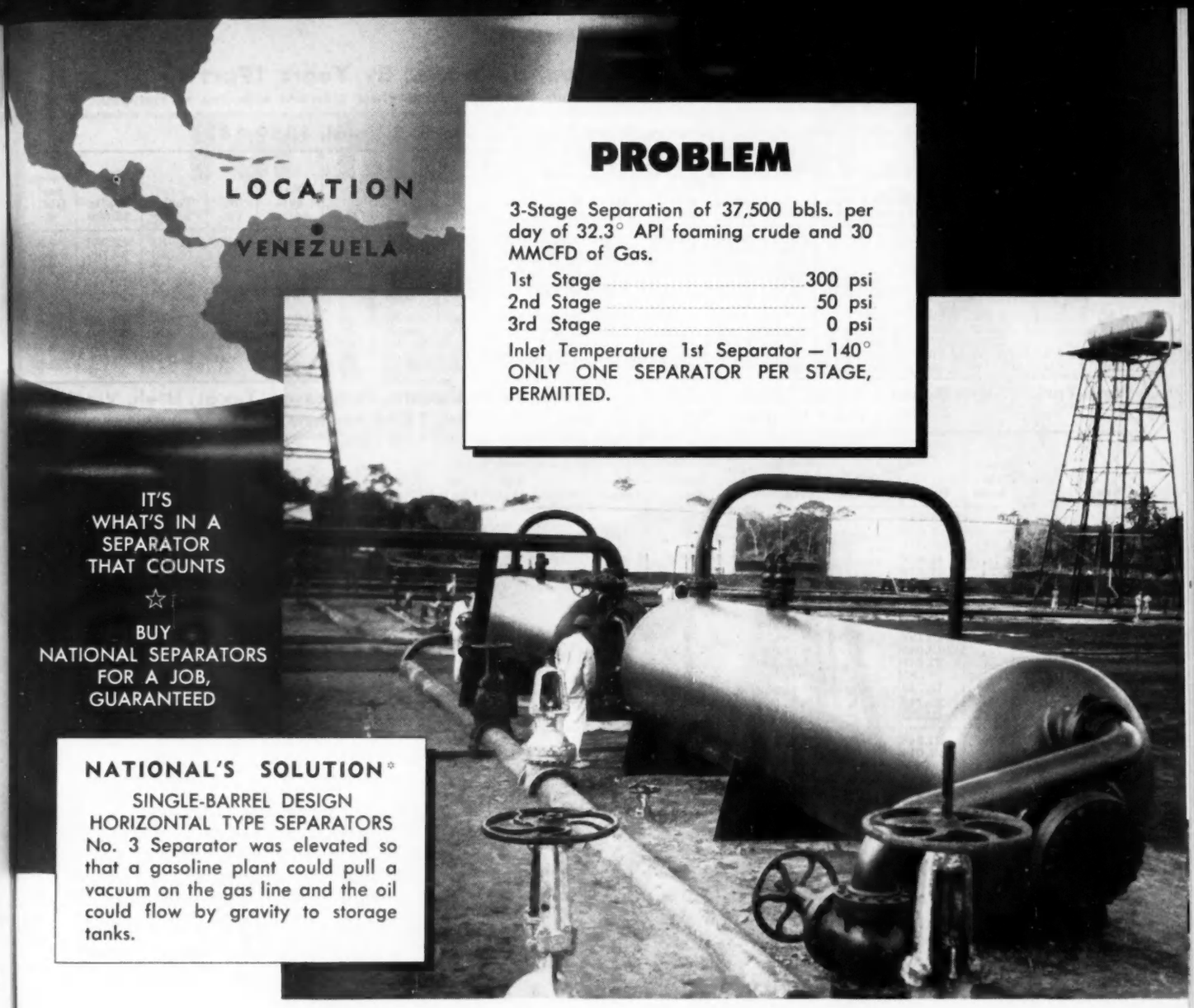
[B] *Petroleum in U. S. and Possessions*, by Arnold and Kemnitzer, shows for Alas. following data: 1904-1919, est., 56,000 bbls.; 1920, 11,000 bbls; 1921, 10,000 bbls.; 1922-1928, est., 73,000 bbls.; total, 1904-1928, 150,000 bbls.

[C] "Unclassified" includes 1912, Alas. and Mich.; 1913, Alas., Mich., Mo. and N. Mex.; 1914-16, Alas., Mich. and Mo.; 1917-18, Alas. and Mich.; 1919, Alas., Mich., Mo. and N. Mex.; 1920. Alas., Ark., Mo., N. Mex. and Ut.; 1921-23, Alas., Mo. and N. Mex.; 1924-31, Alas. and Ut.; 1932, Alas., Mo. and Ut.; 1933, Alas., Mis., Mo. and Ut.; 1934, Mis., Mo. and Ut.; 1935, Mis., Mo., Ten. and Ut.; 1936-1938; Mo., Ten. and Ut.

[D] Pa. and N. Y. separated in years 1864-1881, by aid of *Petroleum in U. S. and Possessions*, by Arnold and Kemnitzer.

[E] *Petroleum in U. S. and Possessions* gives following additional estimates not shown by official *Mineral Resources;* O., 1860-1875, 200,000 bbls.; W. Va., 1860-1875, 2,800,000 bbls.; Ky., 1860-1882, 161,000 bbls.

[F] N. Y. incl. with Pa.



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3-Stage Separation of 37,500 bbls. per day of 32.3° API foaming crude and 30 MMCFD of Gas.

1st Stage	300 psi
2nd Stage	50 psi
3rd Stage	0 psi

Inlet Temperature 1st Separator — 140°
ONLY ONE SEPARATOR PER STAGE, PERMITTED.

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SINGLE-BARREL DESIGN
HORIZONTAL TYPE SEPARATORS
No. 3 Separator was elevated so that a gasoline plant could pull a vacuum on the gas line and the oil could flow by gravity to storage tanks.

NATIONAL FURNISHED SEPARATORS WITH THE FOLLOWING SIZES AND OPERATIONAL CAPACITIES

	Press. on Separator psi	Bbls. oil per day	Std. Cu. Ft. Gas Per day
No. 1 Separator — 5′ x 22′-6″ long	300		22,700,000
No. 2 Separator — 5′ x 22′-6″ long	50		7,200,000
No. 3 Separator — 6′ x 20′ long	0	37,500	194,000
TOTALS		37,500	30,094,000

Had only one stage of separation been utilized at 300 psi, over 7,000,000 cu. ft. per day would have been liberated in the stock tanks.

It's a National

NATIONAL TANK COMPANY

TULSA, OKLAHOMA

United States Crude Oil Production, By States, By Years (Part 2)

Data in thousands of barrels; from *Mineral Resources and Minerals Yearbook*, except where otherwise indicated in footnotes.

New York, Ohio, Pennsylvania, West Virginia, and U. S. Total, 1859-1885

Year	New York	Penn-sylvania	U.S.	Value at Wells $1,000	[O] Value per Bbl. $	Year	New York	Penn-sylvania	Total U.S.	Value at Wells $1,000	[O] Value per Bbl. $	Year	New York	Ohio	Penn-sylvania	W. Va.	Total U.S.	Value at Wells $1,000	[O] Value per Bbl. $
1856	.....	.....	.....	.....	.....	1866	[D]144	[D]3,454	3,598	13,455	3.75	1876	[D]359	32	[D]8,610	120	9,133	22,983	2.52
1857	.....	.....	.....	.....	.....	1867	[D]134	[D]3,213	3,347	8,067	2.40	1877	[D]525	30	[D]12,610	172	13,350	31,789	2.38
1858	.....	.....	.....	.....	.....	1868	[D]146	[D]3,500	3,646	13,217	3.62	1878	[D]607	38	[D]14,557	180	15,397	18,045	1.17
1859	.....	2	2	32	20.00	1869	[D]169	[D]4,046	4,215	23,730	5.60	1879	[D]787	29	[D]18,898	180	19,914	17,211	.86
1860	.....	500	500	4,800	9.60	1870	[D]211	[D]5,050	5,261	20,504	3.90	1880	[D]1,041	39	[D]24,987	179	26,286	24,601	.94
1861	.....	2,114	2,114	1,036	.52	1871	[D]208	[D]4,997	5,205	22,591	4.40	1881	[D]1,095	34	[D]26,281	151	27,661	25,448	.92
1862	.....	3,057	3,057	3,210	1.05	1872	[D]252	[D]6,041	6,293	21,440	3.75	1882	6,685	40	23,368	128	30,350	23,631	.78
1863	.....	2,611	2,611	8,226	3.15	1873	[D]396	[D]9,498	9,894	18,100	1.80	1883	4,004	47	19,125	126	23,450	25,790	1.10
1864	[D F H]	[D F]2,116	2,116	20,897	8.15	1874	[D]437	[D]10,490	10,927	12,648	1.15	1884	3,231	90	20,541	90	24,218	20,596	.85
1865	[D]100	[D]2,398	2,498	16,460	6.59	1875	[D]352	[D]8,436	8,788	7,368	.97	1885	2,658	662	18,118	91	21,859	19,198	.88

New York, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wyoming, and U. S. Total, 1886 to Now

Year	New York	N. Dakota	Ohio	Oklahoma	Pennsylvania	S. Dakota	Tennessee	Texas	[A] Utah	Virginia	W. Virginia	Wyoming	[B] Alaska	[C] Unclassified	Total United States	Value at Wells $1,000	[O] Value per Bbl. $
1886	2,151	.....	1,783	.....	23,647	.....	[G]	.....	.....	.....	102	.....	.....	.....	28,065	19,996	.71
1887	2,075	.....	5,023	.....	20,281	.....	[G]	.....	.....	.....	145	.....	.....	.....	28,283	18,877	.67
1888	1,789	.....	10,011	.....	14,700	.....	[G]	.....	.....	.....	119	.....	.....	.....	27,612	17,948	.65
1889	1,897	.....	12,472	.....	19,591	.....	[G]	[H]	.....	.....	544	.....	.....	.....	35,164	26,963	.77
1890	1,658	.....	16,125	.....	26,800	.....	[G]	.....	.....	.....	493	.....	.....	.....	45,824	35,365	.77
1891	1,585	.....	17,740	[H]	31,424	.....	[G]	[H]	.....	.....	2,406	.....	.....	.....	54,293	30,527	.56
1892	1,273	.....	16,363	[H]	27,149	.....	[G]	[H]	.....	.....	3,810	.....	.....	.....	50,515	25,907	.51
1893	1,032	.....	16,249	[H]	19,283	.....	[G]	[H]	.....	.....	8,446	.....	.....	.....	48,431	28,950	.60
1894	942	.....	16,792	[H]	18,078	.....	[G]	[H]	.....	.....	8,577	2	.....	.....	49,344	35,522	.72
1895	913	.....	19,545	[H]	18,231	.....	[G]	[H]	.....	.....	8,120	4	.....	.....	52,892	57,632	1.09
1896	1,205	.....	23,941	[H]	19,379	.....	[G]	1	.....	.....	10,020	3	.....	.....	60,960	58,519	.96
1897	1,279	.....	21,561	1	17,983	.....	[G]	66	.....	.....	13,090	4	.....	.....	60,476	40,874	.68
1898	1,205	.....	18,739	.....	14,743	.....	[G]	546	.....	.....	13,615	6	.....	.....	55,364	44,193	.80
1899	1,321	.....	21,142	.....	13,054	.....	[G]	669	.....	.....	13,911	6	.....	.....	57,071	64,604	1.13
1900	1,301	.....	22,363	6	13,258	.....	[G]	836	.....	.....	16,196	6	.....	.....	63,621	75,989	1.19
1901	1,207	.....	21,648	10	12,625	.....	[G]	4,394	.....	.....	14,177	5	.....	.....	69,389	66,417	.96
1902	1,120	.....	21,014	37	12,064	.....	[G]	18,084	.....	.....	13,513	6	.....	.....	88,767	71,179	.80
1903	1,163	.....	20,480	139	11,355	.....	[G]	17,956	.....	.....	12,900	9	.....	.....	100,461	94,694	.94
1904	1,113	.....	18,877	1,367	11,126	.....	[G]	22,241	.....	.....	12,645	12	[N]	.....	117,081	101,175	.86
1905	1,118	.....	16,347	[I]8,264	10,437	.....	[G]	28,136	.....	.....	11,578	8	.....	.....	134,717	84,157	.62
1906	1,243	.....	14,788	[I]18,091	10,257	.....	[G]	12,568	.....	.....	10,121	7	.....	.....	126,494	92,445	.73
1907	1,212	.....	12,207	43,524	10,000	.....	[G]	12,323	[M]	.....	9,095	[M]9	[N]	.....	166,095	120,107	.72
1908	1,160	.....	10,859	45,799	9,424	.....	.....	11,207	[M]	.....	9,523	[M]18	.....	.....	178,527	129,079	.72
1909	1,135	.....	10,633	47,859	9,299	.....	.....	9,534	[M]	.....	10,745	[M]20	.....	.....	183,171	128,329	.70
1910	1,054	.....	9,916	52,029	8,795	.....	.....	8,899	[M]	.....	11,753	[M]115	.....	.....	209,557	127,900	.61
1911	953	.....	8,817	56,069	8,248	.....	.....	9,526	[M]	.....	9,796	[M]187	[N]	.....	220,449	134,045	.61
1912	874	.....	8,969	51,427	7,838	.....	.....	11,735	[M]	.....	12,129	[M]1,572	[K]	4	222,935	164,213	.74
1913	948	.....	8,781	63,579	7,917	.....	.....	15,010	[N]	.....	11,567	2,407	[K]	11	248,446	237,121	.95
1914	939	.....	8,536	73,632	8,170	.....	.....	20,068	[N]	.....	9,680	3,560	[K]	8	265,763	214,125	.81
1915	888	.....	7,825	97,915	7,838	.....	.....	24,943	[N]	.....	9,265	4,246	[K]	14	281,104	179,463	.64
1916	874	.....	7,744	107,072	7,593	.....	[L]1	27,645	[N]	.....	8,731	6,234	[K]	8	300,767	330,900	1.10
1917	880	.....	7,751	107,508	7,733	.....	[L]12	32,413	[N]	.....	8,379	8,978	[K]	10	335,316	522,635	1.56
1918	809	.....	7,285	103,347	7,408	.....	[L]8	38,750	[N]	.....	7,867	12,596	[K]	8	355,928	703,944	1.98
1919	851	.....	7,736	86,911	8,137	.....	15	79,366	[N]	.....	8,327	13,172	[K]	12	378,367	760,266	2.01
1920	906	.....	7,400	106,206	7,438	.....	14	96,868	[K]	.....	8,249	16,831	[K]	13	442,929	1,360,745	3.07
1921	988	.....	7,335	114,634	7,418	.....	12	106,166	.....	.....	7,822	19,333	[K]	12	472,183	814,745	1.73
1922	1,000	.....	6,781	149,571	7,425	.....	10	118,684	[K]	.....	7,021	26,715	[K]	13	557,531	895,111	1.61
1923	1,250	.....	7,085	160,929	7,609	.....	8	131,023	.....	.....	6,358	44,785	[K]	18	732,407	978,430	1.34
1924	1,440	.....	6,811	173,538	7,486	.....	10	134,522	[K]	.....	5,920	39,498	[K]	13	713,940	1,022,683	1.43
1925	1,695	.....	7,212	176,768	8,097	.....	24	144,648	[K]	.....	5,763	29,173	[K]	12	763,743	1,284,960	1.68
1926	1,956	.....	7,272	179,195	8,961	.....	43	166,916	[K]	.....	5,946	25,776	[K]	8	770,874	1,447,760	1.88
1927	2,242	.....	7,593	277,775	9,526	.....	60	217,389	[K]	.....	6,023	21,307	[K]	7	901,129	1,172,830	1.30
1928	2,603	.....	7,015	249,857	9,956	.....	46	257,320	[K]	.....	5,661	21,461	[K]	6	901,474	1,054,880	1.17
1929	3,377	.....	6,743	255,004	11,820	.....	19	296,876	[K]	.....	5,574	19,314	[K]	7	1,007,323	1,280,417	1.27
1930	3,647	.....	6,486	216,486	12,803	.....	21	290,457	[K]	.....	5,071	17,868	[K]	7	898,011	1,070,200	1.19
1931	3,363	.....	5,327	180,574	11,892	.....	6	332,437	[K]	.....	4,472	14,834	[K]	7	851,081	550,630	.65
1932	3,508	.....	4,644	153,244	12,412	.....	5	312,478	[K]	.....	3,876	13,418	[K]	16	785,159	680,460	.87
1933	3,181	.....	4,235	182,251	12,624	.....	5	402,609	[K]	.....	3,815	11,227	[K]	30	905,656	608,000	.67
1934	3,804	.....	4,234	180,107	14,478	.....	10	381,516	[K]	.....	4,095	12,556	.....	41	908,065	904,825	1.00
1935	4,236	.....	4,082	185,288	15,810	.....	[K]	392,666	[K]	.....	3,902	13,755	.....	65	996,596	961,440	.96
1936	4,663	.....	3,847	206,555	17,070	.....	[K]	427,411	[K]	.....	3,847	14,582	.....	63	1,099,687	1,199,820	1.09
1937	5,478	.....	3,559	228,839	19,189	.....	[K]	510,318	[K]	.....	3,845	19,166	.....	77	1,279,160	1,513,340	1.18
1938	5,045	.....	3,298	174,994	17,426	.....	[K]	475,850	[K]	.....	3,684	19,022	.....	82	1,214,355	1,373,060	1.13
1939	5,098	.....	3,156	159,913	17,382	.....	50	483,528	4	.....	3,580	21,454	.....	.....	1,264,962	1,294,470	1.02
1940	4,999	.....	3,159	156,164	17,353	.....	24	493,209	3	.....	3,444	25,711	.....	.....	1,353,214	1,385,440	1.02
1941	5,185	.....	3,510	154,702	16,750	.....	12	505,572	4	.....	3,433	29,878	.....	.....	1,402,228	1,602,000	1.14
1942	5,421	.....	3,543	140,690	17,779	.....	9	483,097	.....	.....	3,574	32,812	.....	.....	1,386,645	1,643,470	1.19
1943	5,059	.....	3,322	123,152	15,757	.....	10	594,343	.....	2	3,349	34,253	.....	.....	1,505,613	1,809,020	1.20
1944	4,697	.....	2,937	124,616	14,118	.....	8	746,699	.....	4	3,070	33,356	.....	.....	1,677,904	2,032,960	1.21
1945	4,648	.....	2,828	139,299	12,515	.....	8	754,710	.....	4	2,879	36,219	.....	.....	1,713,655	2,094,250	1.22
1946	4,863	.....	2,908	134,794	12,996	.....	10	760,215	.....	23	2,929	38,977	.....	.....	1,733,939	2,442,550	1.41
1947	4,762	.....	3,108	141,019	12,690	.....	8	820,210	.....	61	2,617	44,772	.....	.....	1,856,987	3,577,890	1.93
1948	4,621	.....	3,600	154,455	12,667	.....	6	903,498	.....	33	2,692	55,032	.....	.....	2,020,185	5,245,080	2.60
1949	4,425	.....	3,483	151,660	11,374	.....	18	744,834	637	43	2,839	47,890	.....	.....	1,841,940	4,674,770	2.54
1950	4,143	.....	3,383	164,599	11,859	.....	12	829,874	1,228	21	2,808	61,631	.....	.....	1,973,574	4,963,380	2.51
1951	4,254	25	3,140	186,869	11,345	.....	14	1,010,270	1,305	12	2,757	68,929	.....	.....	2,247,711	5,690,410	2.53
1952	4,242	1,549	3,350	190,435	11,233	.....	15	1,022,139	1,737	10	2,602	68,074	.....	.....	2,289,836	5,785,230	2.53
1953	3,800	5,183	3,550	202,570	10,669	.....	13	1,024,780	1,807	10	3,038	84,918	.....	.....	2,359,998	6,324,795	2.68
1954	3,408	5,858	3,825	186,423	8,934	35	15	979,749	1,887	14	2,894	93,338	.....	.....	2,312,212	6,381,705	2.76
Total	192,715	12,615	634,864	7,027,761	1,167,344	35	561	17,759,797	8,612	237	452,251	1,231,057	.....	572	50,128,845	82,410,889	1.64

[O] Tenn. incl. with Ky., 1876-1907, incl.
[H] Less than 500 bbls.
[I] Figures for Okla. and Kan. for years 1905-1906 shown together by *Mineral Resources;* here divided by aid of *Petroleum in U. S. and Possessions*, by Arnold and Kemnitzer.
[J] Mich. shown with Mo. in 1900-1911.
[K] Included under "Unclassified."
[L] Ky. and Tenn. in 1916-18 obtained with aid of *Mineral Resources and Petroleum in U. S. and Possessions.*
[M] Small prod. of Ut. (mostly used as fuel) shown with Wyo.
[N] Little prod. but no record available.
[O] Average price per bbl. for 1859-1875 from *Petroleum in U. S. and Possessions;* remainder from *Mineral Resources* and *Minerals Yearbook* except 1950 and 1951 estimated.
[F] Bureau of Mines for first 10 months; Nov. and Dec. est. by World Oil, from weekly reports of API and other sources.

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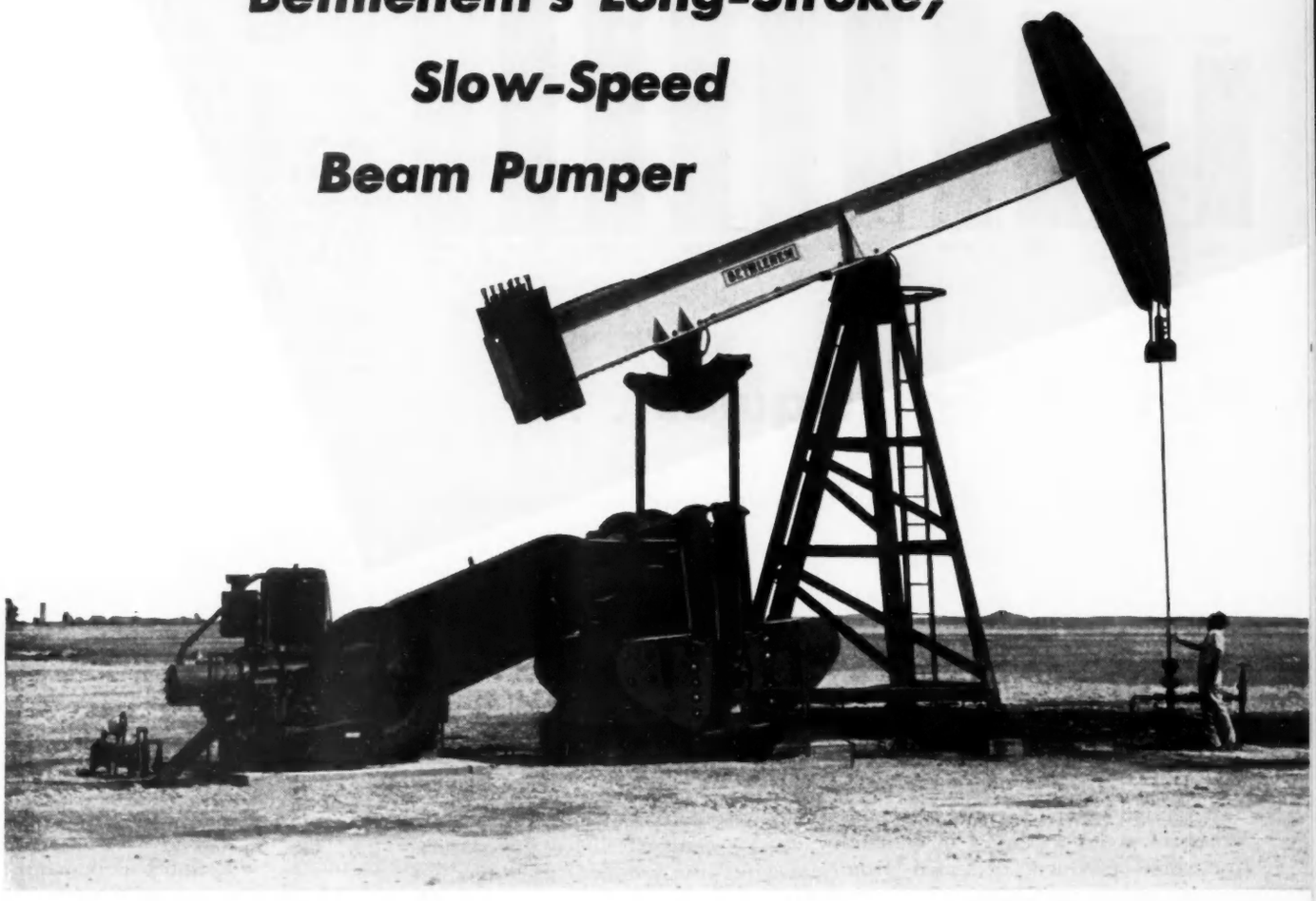

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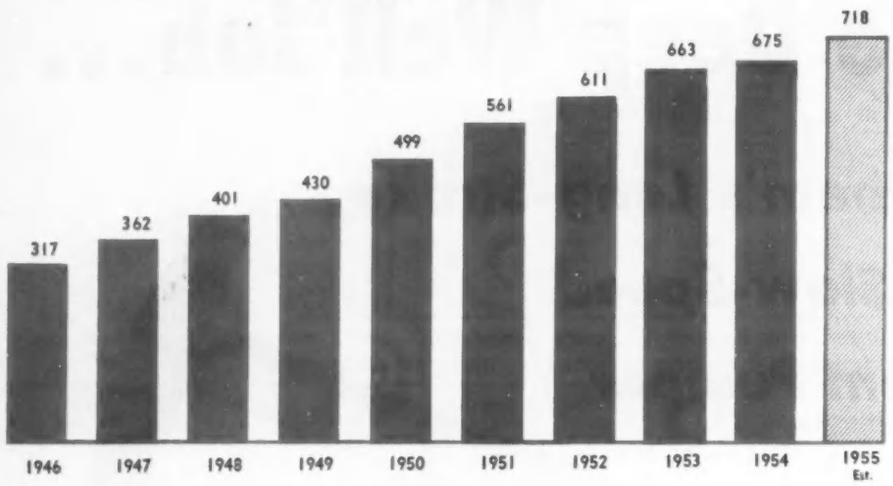


Natural Gas Liquids . . .

Surpluses hurt markets, but demand outlook encouraging.

OVERPRODUCTION, excessive stocks, and resultant weakness of prices characterized the markets for natural gas liquids in 1954, and no great improvement of conditions was in immediate prospect for 1955 as the new year commenced. However, encouragement was offered by the promise of an increase of about 5 percent in demand for these products extracted from natural gas.

These light hydrocarbons, including natural gasoline, liquefied petroleum gases, and allied products, are volatile and costly to hold in storage, and the markets for them are quite sensitive to excesses of supply over demand. In late 1953 and in 1954, production somewhat exceeded demand, and stocks increased substantially, from about 10 million barrels at beginning of 1954 to over 15 million barrels at mid-year, where they remained in the latter part of the year.

Prices of both natural gasoline and LPG were relatively weak at the beginning of 1954; and with stocks of all gasolines excessive, they soon declined even further and remained depressed through the spring and early summer. In late summer and fall, however, with benefit of seasonally high demand for motor fuel, the prices showed appreciable improvement, recovering to about the same levels as at the beginning of the year.

For all natural gas liquids combined, the average price at the plant in 1954 was about 5.4 cents per gallon, a decrease of 0.6 cent from the 6.0 cents of 1953 and the lowest since the 5.3 cents of 1947. For natural gasoline, the average price in 1954 was almost one cent less than the 1953 average of 7.6 cents. For liquefied petroleum gas, the average price of 4 cents a gallon was slightly below that of the previous year.

U. S. Production of Natural Gas Liquids
(Source: Bureau of Mines except Nov.-Dec., 1954 estimated. New series beginning 1941 includes cycle condensate.)
THOUSANDS OF BARRELS

Year	Total	Daily	Year	Total	Daily
			1936..	42,770	117
Natural	Gasoline		1937..	49,177	135
1918...	6,727	18	1938..	51,347	141
1919...	8,370	23	1939..	51,650	142
1920...	9,161	25	1940..	55,700	152
			Natural Gas Liquids		
1921...	10,713	29	1941..	80,855	222
1922...	12,044	33	1942..	83,222	228
1923...	19,434	53	1943..	87,716	240
1924...	22,235	61	1944..	100,046	273
1925...	26,845	74	1945..	112,004	307
1926...	32,455	89	1946..	115,739	317
1927...	39,075	107	1947..	132,173	362
1928...	43,191	118	1948..	146,721	401
1929...	53,183	146	1949..	157,086	430
1930...	52,631	144	1950..	181,961	499
1931...	43,617	119	1951..	204,754	561
1932...	36,281	99	1952..	223,515	611
1933...	33,810	93	1953..	241,890	663
1934...	36,556	100	1954..	246,500	675
1935...	39,333	108	1955		
			Est..	258,500	718

Production to rise. U. S. production of natural gas liquids will average 718,000 barrels per day in 1955, the Bureau of Mines forecasts. That would be 43,000 barrels or 4.8 percent above 1954. The output of 675,000 barrels daily in 1954 was 1.9 percent above 1953, and the 663,000 daily of 1953 had been 8.2 percent above 1952. Although the 1954 production represented an increase of only 1.9 percent, the 1953 level had exceeded demand, and in 1954 the total demand for all oils was up less than 1 percent. The 1.9 percent increase in natural gas liquids production in 1954 contrasted with a decrease of 2.0 percent in U. S. crude oil production.

The total annual production of natural gas liquids in 1954 was approximately 247 million barrels, including natural gasoline, liquefied petroleum gases, and allied products. Natural gasoline production reached the 1953 level of 127 million barrels, according to a recent release from the Bureau of Mines. And production of liquefied petroleum gas (including isopentane) increased 7 percent to 120 million barrels, stated the bureau.

Liquefied petroleum gas products are becoming a greater proportion of all natural gas liquids production; and natural gasoline, going into the making of motor fuel, conversely is becoming a smaller percentage of the total, although use in motor fuel continues to increase in volume as demand for that product rises. In 1954, LPG constituted 48.6 percent of the total production of natural gas liquids, and natural gasoline constituted 51.4 percent. Liquefied petroleum gases, including butane, propane, and other products, are used in cooking, home heating, chemicals, and as a motor fuel for tractors, trucks, buses, and drilling rigs.

Five leading states. The positions of the five leading natural gas liquids producing states in 1954 were the same as in 1953, although there were increases in three of them and decreases in two. Texas, Oklahoma, and New Mexico showed increases, while California and Louisiana registered small declines.

Continuing as the No. 1 producing state, Texas averaged 367,000 barrels per day in 1954, an increase of 5300 barrels or 1.5 percent over 1953.

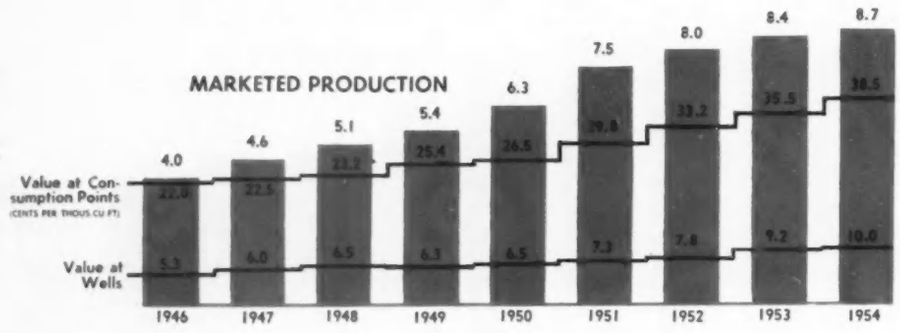
Production of Natural Gas Liquids, by States, by Years

(Natural Gasoline, Cycle Products, and Liquefied Petroleum Gases. Source: Bureau of Mines. Data in Thousands of Barrels.)

YEAR	Arkansas	California	Colorado	Illinois	Kansas	Kentucky	Louisiana	Michigan	Mississippi	Montana	New Mexico
Natural Gasoline:											
1911	.....	1	.....	4	.....	.....	.....	....	....	....	....
1912	.....	25	.....	7	.....	.....	.....	....	....	....	....
1913	.....	82	.....	14	.....	.....	.....	....	....	....	.
1914	.....	180	.....	28	.....	.....	.....	....	....	....	....
1915	.....	306	.....	25	1	.....	5	....	....	....	....
1916	.....	409	.....	54	5	17	50	....	....	....	....
1917	.....	686	.....	117	28	91	119	....	....	....	....
1918	.....	768	.....	109	57	79	167	....	....	....	....
1919	.....	962	.....	144	78	122	240	....	....	....	....
1920	.....	1,148	.....	144	103	107	253	....	....	....	....
1921	.....	1,386	.....	179	85	101	365	....	....	....	....
1922	102	1,598	.....	185	68	124	700	....	....	....	....
1923	385	4,127	.....	175	209	181	969	....	....	....	....
1924	418	5,538	.....	216	278	173	1,145	....	....	....	....
1925	469	7,219	1	235	466	183	1,035	....	....	....	..
1926	723	9,271	7	238	604	183	1,037	....	....	....	35
1927	893	11,858	22	211	859	178	1,068	....	....	....	44
1928	778	13,907	45	186	875	173	1,310	....	....	....	36
1929	796	20,008	39	169	863	143	1,547	....	....	....	25
1930	730	19,754	31	164	836	158	1,755	....	....	....	87
1931	626	16,198	16	120	778	130	1,382	....	....	....	423
1932	444	13,140	11	109	590	116	1,100	....	....	....	417
1933	362	11,817	10	87	592	108	880	4	....	31	456
1934	310	12,054	15	91	664	99	966	14	....	30	518
1935	311	12,729	10	63	774	142	1,184	44	....	41	466
1936	285	14,128	11	56	899	143	1,731	48	....	49	689
1937	269	14,855	10	61	1,358	175	2,534	57	....	54	911
1938	611	15,736	9	58	1,333	167	2,277	86	....	42	1,181
1939	587	14,458	9	95	1,481	185	2,240	71	....	51	1,303
1940	764	13,988	9	511	1,541	228	2,708	93	....	62	1,326
1941	669	13,741	9	1,306	1,736	245	4,786	135	....	61	1,645
Cumulative	10,532	252,077	264	5,161	17,161	3,743	33,553	552	....	421	9,562
Natural Gas Liquids:											
1941	819	15,709	9	2,218	2,040	842	5,374	135	....	94	1,929
1942	1,016	15,079	8	3,317	1,948	873	7,049	60	....	108	2,123
1943	1,353	16,508	[1]	4,417	2,029	1,031	7,287	29	....	111	1,929
1944	1,798	18,364	[1]	4,628	1,663	1,161	11,730	202	....	114	1,932
1945	2,046	21,232	[1]	4,190	1,729	1,116	13,077	324	....	112	2,329
1946	2,012	21,679	20	3,847	1,966	1,282	13,495	294	....	109	2,468
1947	2,240	25,336	24	3,869	2,362	1,422	14,973	102	475	137	2,692
1948	2,259	26,549	33	3,539	2,561	1,566	16,901	62	1,123	201	3,103
1949	2,280	27,154	342	3,218	2,647	1,620	19,254	86	1,271	230	4,025
1950	2,333	28,328	[1]	3,107	3,687	1,779	20,768	79	1,312	251	5,019
1951	2,348	29,533	[1]	[2]2,971	4,226	2,166	22,482	[2]	1,202	277	5,588
1952	2,640	30,114	[1]	[2]2,826	4,586	4,449	23,083	[2]	1,270	204	6,627
1953	2,705	31,141	[1]	[3]3,860	[3]5,152	5,039	22,686	[2]	1,189	[1]	7,569
[4]1954	2,597	30,609	[1]	[2]11,782	[3]4,817	[2]	22,243	[2]	1,028	[1]	10,512
1953 Daily Average	7.4	85.3	[1]	[2]10.6	[3]14.1	13.8	62.2	[2]	3.3	[1]	20.7
[4]1954 Daily Average	7.1	83.8	[1]	[2]32.3	[3]13.2	[2]	60.9	[2]	2.8	[1]	28.8

YEAR	New York	Ohio	Oklahoma	Pennsylvania	Texas	Utah	West Virginia	Wyoming	Others	Total	VALUE AT PLANT $ Thous.	VALUE AT PLANT ¢ Gal.
Natural Gasoline:												
1911	....	40	9	35	.....	....	87	.....	1	177	$ 532	7.2
1912	....	41	37	49	.....	....	127	.....	2	288	1,157	9.6
1913	....	49	154	88	.....	....	183	.....	3	573	2,458	10.2
1914	....	58	410	110	.....	....	221	.....	7	1,014	3,106	7.3
1915	....	52	754	140	3	....	258	.....	12	1,556	5,151	7.9
1916	6	63	1,151	231	31	....	447	.....	....	2,464	14,331	13.8
1917	4	130	2,741	329	165	....	778	.....	....	5,188	40,189	18.4
1918	5	161	3,898	376	174	....	895	38	....	6,727	50,364	17.8
1919	11	209	4,524	483	222	....	1,242	133	....	8,370	64,197	18.3
1920	10	238	4,259	504	784	....	1,403	207	....	9,160	71,788	18.7
1921	9	217	4,413	473	1,837	....	1,301	347	....	10,713	61,815	13.7
1922	12	205	4,510	441	2,272	....	1,352	475	....	12,044	72,711	14.4
1923	10	239	6,435	455	4,233	....	1,509	507	....	19,434	77,268	9.5
1924	11	225	7,168	458	4,442	....	1,466	697	....	22,235	82,233	8.8
1925	10	207	9,306	449	5,098	....	1,385	780	1	26,844	120,383	10.7
1926	13	258	11,327	484	5,788	....	1,519	967	1	32,455	136,412	10.0
1927	11	289	13,050	399	7,636	....	1,528	1,029	....	39,075	118,688	7.2
1928	9	314	14,755	395	7,727	....	1,660	1,020	1	43,191	138,944	7.7
1929	6	266	16,096	438	9,987	....	1,738	1,061	1	53,183	158,410	7.1
1930	5	213	14,076	398	11,698	....	1,508	1,217	1	52,631	128,160	5.8
1931	3	124	10,831	341	10,159	....	1,258	1,227	1	43,617	63,732	3.5
1932	3	123	9,014	278	8,836	....	1,042	1,057	1	36,281	49,244	3.2
1933	2	111	8,583	278	8,727	....	949	813	....	33,810	54,368	3.8
1934	2	140	8,462	257	11,109	....	997	828	....	36,556	60,523	3.9
1935	1	148	9,045	301	12,304	....	1,010	768	....	39,333	70,940	4.3
1936	....	166	9,967	340	12,394	....	1,057	807	....	42,770	84,572	4.7
1937	1	183	11,721	332	14,650	....	1,199	807	....	49,177	97,125	4.7
1938	1	176	11,155	254	16,331	....	1,200	730	....	51,347	87,266	4.0
1939	1	177	10,384	280	18,334	....	1,245	749	....	51,650	90,050	4.2
1940	....	192	9,509	366	22,191	....	1,400	812	....	55,700	68,261	2.9
1941	....	196	8,625	368	28,100	....	1,568	827	....	64,017	105,815	3.9
Cumulative	146	5,210	226,369	10,130	225,232	....	33,532	17,903	32	851,580	$2,180,193	6.1
Natural Gas Liquids:												
1941	....	196	10,795	381	37,116	....	2,334	864	....	80,855	119,120	3.5
1942	....	166	10,598	364	37,330	....	2,425	858	....	83,322	121,565	3.5
1943	....	155	10,055	417	39,191	....	2,332	[1]872	....	87,716	146,910	4.0
1944	....	173	10,042	417	44,534	....	2,117	[1]1,171	....	100,046	183,500	4.3
1945	....	154	9,909	338	52,103	....	2,086	[1]1,258	....	112,004	187,564	4.0
1946	....	149	9,881	262	54,357	14	2,868	1,036	....	115,739	180,281	3.7
1947	....	168	10,631	310	62,844	14	3,364	1,210	....	132,173	294,994	5.3
1948	....	150	11,178	291	72,116	14	3,637	1,438	....	146,721	458,977	7.4
1949	....	123	12,486	244	77,031	10	3,760	1,305	....	157,086	402,190	6.1
1950	....	103	14,733	246	93,650	[1]	4,623	[1]1,943	....	181,961	419,605	5.5
1951	....	107	17,542	210	108,531	[1]	4,951	[2]2,580	....	204,754	508,161	5.9
1952	....	38	18,613	190	120,154	[1]	5,788	[2]2,933	....	223,515	533,160	5.7
1953	....	11	20,183	147	132,040	[1]	7,190	[2]2,978	....	241,890	609,563	6.0
[4]1954	....	20	20,443	136	133,947	[1]	5,102	[3]3,264	....	246,500	558,138	5.4
1953 Daily Average	....	0.0	55.3	0.4	361.7	[1]	19.7	[3]8.2	....	662.7	.....	....
[4]1954 Daily Average	....	0.0	56.0	0.4	367.0	[1]	14.0	[3]9.0	....	675.3	.....	....

[1] Wyo. in 1943-45 incl. Colo.; in 1950, Colo.-Ut.; in 1951-52, Colo.-Neb.-Ut.; in 1953 and 1954, Colo-Mont.-Ut. [2] Ill. in 1952-53 incl. Mich., in 1954 incl. Mich.-Ky.-Ind. [3] Kans. incl. Neb. [4] Nov.-Dec. est. by WORLD OIL.



Natural Gas Production and Use . . . 8.7 trillion cubic feet marketed, 52 percent in interstate shipment. Million consumers gained.

THE U. S. NATURAL gas industry fed 8.7 trillion cubic feet into the market last year as growing demand assured still more records to come.

Marketed production has thus doubled since 1946 and tripled since 1941. Production in 1954 rose 303 billion cubic feet for the greatest growth registered in a single year since 1952.

Gross production leaped to 11 trillion cubic feet during the year, it is estimated by WORLD OIL with the aid of reports from the Bureau of Mines and the American Gas Association. The figure for 1953 was 10.6 trillion. Of 1954's gross output, 1.4 trillion cubic feet was used for repressuring and 850 billion was vented or wasted.

The growth ratio for the nation was paralleled by marketed production in Texas, the leading state. Texas marketed more than 4.57 trillion cubic feet last year, compared with 4.38 trillion cubic feet in 1953. Louisiana, the second most productive state, kept step with more than 1.32 trillion cubic feet marketed in 1954, compared with 1.29 for the earlier year. Of the other states marketing in excess of 500 billion cubic feet in 1954, Oklahoma registered a gain to 615 billion, but California's output eased down to 529 billion from 531 billion the year before.

Fifty-two percent of the marketed production, or 4.5 trillion cubic feet, was consumed in states other than those in which it was produced, a reflection of the continuing spread of interstate transmission lines. Interstate shipments accounted for more than 50 percent of the total marketed production for the first time in 1953.

More than 1 million new customers gained access to the fuel during the year, bringing the total to 27,350,000, not counting industrial users. Of the total, 25,200,000 were residential consumers and 2,150,000 were commercial users. The previous year's figure had been 24,186,000 residential and 2,042,000 commercial users. The gas industry has now doubled its number of customers in each category since 1947 and tripled the number since 1936, when there were 8,017,390 residential users and 656,720 in the commercial group.

The growth in interstate gas usage has worsened a problem long critical to the industry. This is the task of educating increasing millions of customers in non-producing states to the necessity of freedom from the government price controls recently upheld by the Supreme Court. The price history of the unregulated gas industry bears out that the cost of gas at the wellhead, or at the time it leaves the possession of the producer, has a negligible relation to the price paid by the residential consumer, on whose behalf the problem has been made a political issue now being mulled in Congress. From 1938, the year the Natural Gas Act was passed, through 1954 the average price received at the wellhead rose from 4.9 cents to 10 cents per thousand cubic feet, an increase of 104.1 percent. But so small is the producer's share of the ultimate cost that the price to residential consumers during this period rose only 19.3 percent.

(SEE TABLES, PAGES 164-166-169)

Gross Withdrawals and Disposition of Natural Gas in the United States, by States, in 1953

Source: U. S. Bureau of Mines Mineral Market Report No. MMS 2341, Dated Nov. 9, 1954 . . . Data in Million Cubic Feet.

STATE	GROSS WITHDRAWALS[1]			DISPOSITION		
	From Gas Wells	From Oil Wells	Total	Marketed Production[2]	Repressuring	Vented and Wasted[3]
Arkansas	38,100	27,000	65,100	41,510	20,003	3,587
California	200,700	590,000	790,700	531,346	252,145	7,209
Colorado	19,000	28,200	47,200	28,509	7,285	11,406
Illinois	650	34,000	34,650	9,282	1,174	24,194
Indiana	130	7,060	7,190	701	39	6,450
Kansas	415,000	60,000	475,000	420,607	1,079	53,314
Kentucky	71,000	2,700	73,700	71,405	.....	2,295
Louisiana	1,246,000	350,000	1,596,000	1,293,644	216,474	85,882
Maryland	1,408	.....	1,408	1,408	.....	.....
Michigan	5,500	5,000	10,500	7,774	1,215	1,511
Mississippi	180,000	75,000	255,000	154,254	53,223	47,523
Montana	25,400	3,000	28,400	27,889	294	217
Nebraska	5,400	2,000	7,400	6,748	191	461
New Mexico	208,000	245,000	453,000	399,086	3,260	50,654
New York	2,200	200	2,400	2,347	.....	53
North Dakota	370	5,200	5,570	498	.....	5,072
Ohio	36,400	1,800	38,200	37,542	34	624
Oklahoma	460,000	425,000	885,000	599,955	92,136	192,909
Pennsylvania	103,800	2,500	106,300	105,558	275	467
Texas	3,835,000	1,624,000	5,459,000	4,383,158	779,054	296,788
Utah	6,870	390	7,260	7,075	.....	185
Virginia	3,697	.....	3,697	3,697	.....	.....
West Virginia	184,000	4,000	188,000	186,477	453	1,070
Wyoming	46,500	58,400	104,900	76,262	10,272	18,366
Other States[4]	112	111	223	184	.....	39
Total: 1953	7,095,237	3,550,561	10,645,798	8,396,916	1,438,606	810,276
1952	6,839,177	3,433,389	10,272,556	8,013,457	1,410,501	848,608

[1] Marketed production plus quantities used in repressuring, vented and wasted.
[2] Comprises gas sold or consumed by producers, including losses in transmission, amounts added to storage, and increases in gas in pipelines.
[3] Partly estimated. Includes direct waste on producing properties and residue blown to the air.
[4] Alabama, Florida, Missouri, South Dakota, and Tennessee.

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1. *SAVES MILES OF PIPE*
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Years ago we set out to cut the high costs of oil well drilling, not just in theory but in practice; not just in pennies but in thousands of dollars. The wasteful overlapping of casing and how to eliminate it took our eye so we set out to whip it. RESULT: Today you find Burns Casing Hangers all over the world saving millions of dollars in casing cost and make-up time.

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3. **BURNS DELAYED ACTION LEAD SEAL PACK OFF CASING HANGER.** *Same features as the Burns circulating type except the by-pass ports are eliminated. You can hang your oil string, circulate, and cement before closing the lead seal packing element.*

U. S. Production and Consumption of Natural Gas, by Years, Part 1, 1936-1945

(Source: U. S. Bureau of Mines, except as noted.)

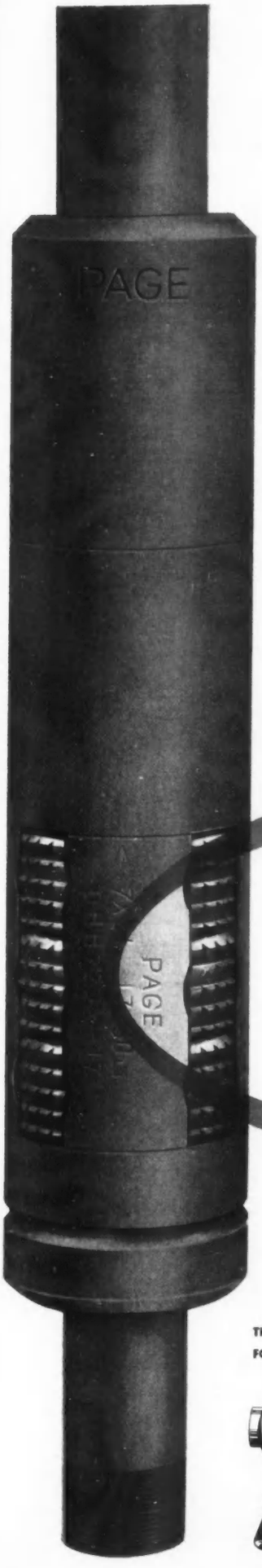
UNITS EXPLAINED IN FOOTNOTE NO. 1

CLASSIFICATION[1]	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Production										
Wells: Gas wells drilled (Incl. Condensate wells)	2,255	2,834	2,236	2,145	2,382	2,911	2,597	2,290	3,069	3,227
Producing gas wells, Dec. 31 (Incl. Condensate wells)	54,500	55,050	53,770	53,530	53,880	55,500	56,150	57,200	58,780	60,600
Production: Gross Production	2,644,835	3,032,410	3,061,200	3,333,500	3,694,100	4,103,500	4,453,900	4,942,560	5,614,220	5,902,180
Source: (1). From gas wells	1,483,595	1,612,580	1,566,975	1,832,880	2,095,180	2,490,590	2,885,090	3,208,780	3,649,830	3,887,727
(2). From oil wells	1,161,240	1,419,830	1,494,225	1,500,680	1,598,920	1,612,910	1,568,810	1,733,780	1,964,390	2,014,453
Disposition: (1). Repressuring	73,507	84,925	101,551	171,401	362,916	644,379	752,619	824,803	882,979	1,061,951
(2). Vented and wasted	392,528	526,159	649,106	677,311	655,967	630,212	626,782	684,115	1,010,285	896,208
(3). Marketed production	2,167,802	2,407,620	2,295,562	2,476,756	2,660,222	2,812,658	3,053,475	3,414,689	3,711,039	3,918,686
Value at wells	119,193	123,457	113,571	120,243	120,493	138,508	154,236	176,893	189,809	191,006
Average value at wells	5.5	5.1	4.9	4.9	4.5	4.9	5.1	5.2	5.1	4.9
Underground storage: Net stored	10,998	13,706	14,981	8,032	14,995	16,251	21,024	18,953	9,917	25,335
Total stored	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total withdrawn	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Interstate shipments[3]	574,343	687,428	636,626	689,795	738,844	815,672	916,969	990,457	1,029,758	1,105,760
Imports	152	289	372	131	.....	.....	.....	.....	.....	.....
Exports	7,436	4,868	1,837	3,122	5,563	7,466	8,702	11,210	14,576	18,207
Treated at natural gasoline plants	1,815,000	2,108,800	2,035,562	2,150,000	2,471,400	2,763,300	2,864,400	3,028,000	3,300,000	3,653,870
Consumption										
Residential: Volume Consumed	343,346	371,844	367,772	391,153	443,646	442,067	498,537	529,444	562,183	607,400
Number of consumers	8,017,390	8,348,390	8,633,970	8,887,460	9,245,230	9,730,110	10,134,770	10,353,870	10,668,400	10,959,060
Value at point of consumption	251,617	273,577	273,070	287,600	315,515	318,093	352,520	370,558	388,359	415,122
Average value at point of consumption	73.3	73.6	74.2	73.5	71.1	72.0	70.7	70.0	69.1	68.3
Commercial: Volume consumed	111,623	117,390	114,296	118,334	134,644	144,844	183,603	204,793	220,747	230,099
Number of consumers	656,720	679,790	704,240	715,390	741,020	766,910	778,830	811,090	845,220	888,660
Value at point of consumption	53,693	57,161	56,247	58,494	64,399	68,398	80,189	87,648	92,137	97,572
Average value at point of consumption	48.1	48.7	49.2	49.4	47.8	47.2	43.7	42.8	41.7	42.4
Industrial: Volume consumed, Total	1,705,549	1,913,807	1,812,029	1,964,278	2,076,369	2,218,281	2,362,633	2,669,242	2,913,533	3,062,980
Field	618,468	651,320	659,203	680,884	711,861	686,158	721,063	780,986	855,180	916,952
Carbon Black	283,421	341,085	324,950	347,270	368,802	365,377	335,533	315,562	355,770	431,830
Other industrial[4]	803,660	921,402	827,876	936,124	995,706	1,166,746	1,306,037	1,572,694	1,702,583	1,714,198
Petroleum refineries	93,183	113,005	109,741	97,685	128,007	148,127	201,670	243,584	315,311	338,458
Portland cement plants	36,923	40,450	37,496	40,212	41,949	54,208	64,540	51,748	35,588	38,349
Electric utility plants	156,080	170,567	169,988	191,131	183,156	205,156	238,736	305,576	359,745	326,190
Value at point of consumption, Total Industrial	170,129	196,791	171,233	187,627	197,090	233,547	258,458	300,731	313,775	321,501
Field	28,397	31,199	29,628	28,610	27,158	29,993	30,587	33,288	36,868	40,090
Carbon Black	3,681	4,294	2,892	3,263	3,702	4,135	4,338	4,624	5,763	9,854
Other industrial	138,051	161,298	138,713	155,754	166,230	199,419	223,533	262,819	271,144	271,557
Avge. value at point of consumption, Total Ind.	10.0	10.3	9.4	9.6	9.5	10.5	10.9	11.3	10.8	10.5
Field	4.6	4.8	4.5	4.2	3.8	4.4	4.2	4.3	4.3	4.4
Carbon Black	1.3	1.3	0.9	0.9	1.0	1.1	1.3	1.5	1.6	2.3
Other industrial	17.2	17.5	16.8	16.6	16.7	17.1	17.1	16.7	15.9	15.8
Total Consumption: Volume consumed	2,160,518	2,403,041	2,294,097	2,473,765	2,654,659	2,805,192	3,044,773	3,403,470	3,696,463	3,900,479
Value at point of consumption	475,439	527,529	500,550	533,721	577,004	620,038	691,167	758,937	794,271	834,195
Average value at point of consumption	22.0	22.0	21.8	21.6	21.7	22.1	22.7	22.3	21.5	21.4

U. S. Production and Consumption of Natural Gas, by Years, Part 2, 1946 to Now

CLASSIFICATION[1]	1946	1947	1948	1949	1950	1951	1952	1953	1954[5]
Production									
Wells: Gas wells drilled (Incl. Condensate wells)	3,090	3,235	2,897	2,887	2,843	3,030	3,255	3,806	[6]4,038
Producing gas wells, Dec. 31 (Incl. Condensate wells)	62,740	63,676	64,212	63,346	64,900	65,100	65,450	[6]69,218	[6]70,686
Production: Gross Production	6,190,200	6,733,230	7,178,777	7,546,825	8,479,650	9,689,372	10,272,566	10,645,798	11,000,000
Source: (1). From gas wells	3,807,500	3,769,768	4,588,547	4,986,126	5,603,200	6,481,452	6,839,177	7,095,237	7,300,000
(2). From oil wells	2,382,700	2,963,462	2,590,230	2,560,699	2,876,450	3,207,920	3,433,389	3,550,561	3,700,000
Disposition: (1). Repressuring	1,038,242	1,083,119	1,220,579	1,273,205	1,396,546	1,438,827	1,410,501	1,438,606	1,450,000
(2). Vented and Wasted	1,102,033	1,067,938	1,810,178	853,884	801,044	793,186	848,608	810,276	850,000
(3). Marketed production	4,030,605	[2]4,582,173	[2]5,148,020	[2]5,419,736	[2]6,282,060	[2]7,457,359	[2]8,013,457	[2]8,396,916	[2]8,700,000
Value at wells	212,251	274,709	333,173	344,034	408,521	542,964	623,649	775,000	870,000
Average value at wells	5.3	6.0	6.5	6.3	6.5	7.3	7.8	9.2	10.0
Underground Storage: Net stored	19,320	9,673	57,371	65,683	54,492	138,282	176,684	158,000	150,000
Total stored	75,458	96,316	136,406	172,051	229,752	347,690	398,593	405,000	350,000
Total withdrawn	56,138	86,643	79,035	106,368	175,260	209,428	221,909	247,000	200,000
Interstate Shipments[3]	1,145,901	1,402,157	1,756,629	2,007,878	2,543,538	3,242,777	3,794,542	4,200,793	4,525,000
Imports	.....	.....	.....	.....	.....	.....	7,807	9,225	10,000
Exports	17,675	18,149	18,704	20,054	25,727	24,163	27,456	28,322	28,000
Treated at natural gasoline plants	3,663,760	4,070,150	4,393,500	4,656,142	5,346,804	6,203,070	6,418,597	.....	.....
Consumption									
Residential: Volume consumed	660,820	802,150	896,348	992,544	1,198,369	1,474,725	1,621,966	1,685,503	1,920,000
Number of consumers	11,471,640	12,203,700	13,508,010	14,689,750	16,905,680	21,443,950	22,569,270	24,186,000	25,200,000
Value at point of consumption	447,018	526,355	585,188	665,536	826,393	1,120,819	1,347,171	1,457,960	1,700,000
Average value at point of consumption	67.6	65.6	65.6	67.1	69.0	76.0	83.1	86.5	88.5
Commercial: Volume consumed	241,802	285,213	323,054	347,818	387,838	464,309	515,669	530,650	600,000
Number of consumers	964,990	1,039,080	1,145,060	1,231,055	1,347,203	1,613,708	1,854,931	2,042,000	2,150,000
Value at point of consumption	102,566	125,844	142,170	158,105	184,430	245,609	294,187	323,697	382,000
Average value at point of consumption	42.4	44.1	44.0	45.5	47.6	52.9	57.0	61.0	63.7
Industrial: Volume consumed, Total	3,110,308	3,339,181	3,725,747	3,855,122	4,440,197	5,163,528	5,475,843	5,763,185	5,780,000
Field	897,809	933,761	1,021,513	1,059,628	1,187,473	1,441,870	1,483,754	1,471,085	1,533,000
Carbon Black	478,349	484,882	480,646	427,892	410,852	426,423	368,399	301,100	247,000
Other industrial[4]	1,734,150	1,920,538	2,223,588	2,367,602	2,841,872	3,295,235	3,623,690	3,991,000	4,000,000
Petroleum refineries	331,520	363,892	441,470	422,357	455,096	537,774	536,402	558,695	585,000
Portland cement plants	58,004	60,499	72,139	84,521	96,986	102,508	111,479	118,500	125,000
Electric utility plants	306,924	373,037	478,097	550,121	628,919	763,898	910,117	1,034,272	1,225,000
Value at point of consumption, Total Industrial	332,772	376,119	466,201	496,948	593,218	752,247	885,961	1,052,558	1,113,000
Field	41,317	49,835	61,123	65,210	73,301	97,429	115,371	124,338	138,000
Carbon Black	14,470	17,316	22,723	20,355	19,677	22,213	20,108	17,500	15,000
Other industrial	276,985	308,968	382,355	411,383	500,240	632,564	750,482	910,720	960,000
Average value at point of consumption, Total Industrial	10.7	11.3	12.5	12.9	13.4	14.6	16.2	18.3	19.3
Field	4.6	5.3	6.0	6.2	6.2	6.8	7.6	8.5	9.0
Carbon Black	3.0	3.6	4.7	4.8	4.8	5.2	5.5	5.8	6.0
Other industrial	16.0	16.1	17.2	17.4	17.6	19.2	20.7	22.8	24.0
Total Consumption: Volume consumed	4,012,930	4,426,544	4,945,149	5,195,484	6,026,404	7,102,562	7,613,478	7,979,338	8,300,000
Value at point of consumption	882,356	1,028,318	1,193,559	1,320,589	1,604,041	2,118,675	2,527,319	2,834,215	3,195,000
Average value at point of consumption	22.0	23.2	24.1	25.4	26.6	29.8	33.2	35.5	38.5

[1] Units—Volume: million cubic feet. No. of consumers: actual. Value: thousand dollars. Average Value: cents per Mcf. [2] Includes gas stored and lost in transmission.
[3] Includes exports. [4] Petroleum refineries, portland cement plants, and electric utility plants included in "Other Industrial." [5] Estimated with aid of reports of Bureau of Mines and American Gas Association. [6] WORLD OIL statistics.



PAGE *

DIFFERENTIAL
HYDRAULIC HOLD DOWN

"THE HOLD DOWN WITH THE DIFFERENTIAL PISTON"

1. ***Prevents slip wear***
2. ***Multiplicity of holding power***
3. ***Pistons and seals are isolated***

Field operations have demanded a Hold Down designed to prevent wear on the slips while running the tool in the well. Page meets this requirement with its Differential Hydraulic Hold Down (DHH) Tool.

When running packers with a Hold Down of the ordinary type, the normal differential pressure causes the slips to wear unnecessarily before the tool reaches its setting depth.

Observe how the Page DHH Tool solves this problem.

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INSURES RUN-IN WITHOUT SLIP WEAR

The Page DHH Tool is designed to hold the slips retracted until the setting depth is reached. The differential hydraulic piston which is spring loaded prevents actuating the slips during the run-in. The differential piston also develops a multiplicity of holding power. The piston chamber is sealed in oil providing complete isolation of the pistons and piston seals from well effluents. Available in all popular sizes.

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United States Marketed Production of Natural Gas, By States, By Years, Part 1

(Millions of Cubic Feet)

Sources: U. S. Bureau of Mines, except for some figures for early years which are from "Petroleum in the United States and Possessions" by Ralph Arnold and William Kemnitzer, and except where otherwise indicated by footnotes.

YEAR	Alabama	Arkansas	California	Colorado	Florida	Illinois	Indiana	Kansas	Kentucky	Louisiana	Maryland	Michigan	Mississippi	Missouri	Montana	Nebraska	New Mexico	New York
*Pre-1906	.....	281	9,810	631	.....	1,505	471,800	81,865	13,243	31	.....	.....	.....	*613	.....	.....	.....	31,340
1906	.....	21	153	23	.....	410	7,861	69,323	789	39	.....	.....	.....	34	.....	.....	.....	2,548
1907	.....	*570	230	57	.....	1,155	6,624	76,707	1,303	88	.....	.....	.....	108	.....	.....	.....	3,288
1908	.....	*1,208	479	50	.....	4,979	5,256	80,740	1,430	252	.....	.....	.....	152	.....	.....	.....	3,843
1909	.....	*1,778	2,324	*45	.....	8,473	6,159	75,074	2,097	1,365	.....	1	.....	49	.....	.....	.....	4,696
1910	.....	*2,412	2,764	*40	.....	6,723	5,760	59,380	1,357	4,110	.....	1	.....	47	.....	.....	.....	6,010
1911	.....	*1,994	6,390	*35	.....	6,762	4,365	38,800	1,275	9,786	.....	2	.....	50	.....	.....	.....	5,240
1912	.....	*1,465	9,355	*30	.....	5,603	3,618	28,068	1,951	14,493	.....	2	.....	53	.....	.....	.....	8,626
1913	.....	*806	11,035	*27	.....	4,767	2,921	22,884	1,821	26,653	.....	2	.....	21	.....	.....	.....	8,515
1914	.....	*633	17,829	*24	.....	3,548	2,580	22,628	1,422	26,745	.....	2	.....	18	.....	.....	.....	8,935
1915	.....	992	21,891	*21	.....	2,690	2,261	27,046	1,667	25,540	.....	2	.....	27	6	.....	.....	7,977
1916	.....	2,388	31,643	*18	.....	3,534	1,715	31,710	2,107	32,081	.....	1	.....	69	213	.....	.....	8,036
1917	.....	5,610	49,427	*14	.....	4,439	1,712	24,439	2,802	31,287	.....	1	.....	31	334	.....	.....	8,372
1918	.....	5,295	39,719	10	.....	4,473	1,667	27,825	3,022	36,094	.....	1	.....	22	177	.....	.....	8,461
1919	.....	5,587	55,607	10	.....	3,825	1,407	16,150	2,057	47,062	.....	1	.....	5	858	.....	.....	8,124
1920	.....	9,027	66,041	9	.....	3,013	1,779	21,158	3,345	58,274	.....	1	.....	4	818	.....	.....	8,419
1921	.....	4,260	75,942	4	.....	2,646	1,066	15,717	4,820	58,004	.....	1	.....	4	336	.....	.....	6,583
1922	.....	9,700	84,580	4	.....	3,383	947	20,289	5,872	70,267	.....	1	.....	3	486	.....	.....	6,947
1923	.....	24,215	131,434	1	.....	4,049	880	30,913	11,953	112,031	.....	1	.....	17	1,470	.....	.....	6,497
1924	.....	36,616	189,692	48	.....	4,072	998	25,580	12,875	160,945	.....	1	.....	71	1,071	.....	.....	6,196
1925	.....	41,878	187,789	574	.....	4,165	1,168	26,917	10,770	152,620	.....	1	.....	34	1,496	.....	.....	6,210
1926	.....	43,566	204,915	554	.....	3,808	901	38,095	10,410	157,423	.....	1	.....	1	2,283	.....	921	7,027
1927	.....	30,450	212,364	1,725	.....	3,741	1,124	42,646	10,206	186,961	.....	1	.....	1	4,253	.....	1,019	5,908
1928	.....	20,235	246,215	2,931	.....	3,051	1,290	45,644	15,383	227,821	.....	469	.....	360	6,277	.....	838	7,224
1929	.....	19,928	342,214	2,787	.....	2,983	1,012	38,469	27,588	261,138	.....	4,526	90	324	9,659	.....	3,054	8,387
1930	.....	18,585	334,789	3,312	.....	2,890	1,217	37,630	28,023	278,341	.....	2,075	179	1,064	10,060	.....	9,497	9,624
1931	.....	13,300	305,930	2,536	.....	2,130	1,337	38,742	27,870	224,155	.....	472	6,048	1,534	10,949	.....	19,354	7,868
1932	.....	10,235	263,484	2,547	.....	1,769	1,349	40,690	29,005	201,561	.....	968	8,648	932	13,295	.....	17,604	8,813
1933	.....	8,288	259,799	2,449	.....	1,631	1,544	41,596	31,380	197,826	.....	1,528	8,679	673	14,391	.....	19,148	6,865
1934	.....	7,024	268,122	2,633	.....	1,868	1,802	46,909	33,124	225,713	.....	2,789	8,245	549	14,971	.....	24,075	6,278
1935	.....	6,167	284,109	2,843	.....	1,448	1,777	57,125	39,738	249,450	.....	4,203	9,643	609	19,870	.....	27,931	8,288
1936	.....	8,500	320,406	3,687	.....	865	2,241	69,178	43,903	290,151	.....	7,167	11,821	399	23,003	.....	33,928	12,431
1937	.....	9,690	329,769	3,186	.....	1,040	1,551	83,890	55,719	315,301	.....	9,080	13,348	444	24,765	.....	46,337	21,325
1938	.....	11,301	315,168	1,904	.....	1,169	1,299	75,203	46,163	283,899	.....	10,165	13,656	1,369	21,216	.....	50,706	39,402
1939	.....	10,107	348,361	2,015	.....	2,746	791	80,556	47,771	294,370	.....	10,726	14,527	538	23,178	.....	60,284	29,222
1940	.....	14,379	351,950	2,533	.....	8,359	1,137	90,003	53,056	343,191	.....	12,648	6,365	310	26,231	.....	63,990	12,187
1941	.....	19,148	374,905	3,256	.....	10,053	1,522	111,121	69,067	403,855	.....	13,916	4,268	196	28,499	.....	64,655	10,456
1942	.....	19,456	403,968	4,865	.....	14,484	1,599	112,921	80,089	447,686	.....	15,521	2,082	100	31,475	.....	78,164	8,718
1943	.....	36,469	457,757	6,445	.....	18,120	1,450	133,729	92,364	505,294	.....	18,006	1,461	124	31,562	.....	86,500	8,062
1944	.....	46,453	502,017	5,141	6	18,137	1,014	157,733	94,223	534,688	.....	19,653	1,352	159	32,102	.....	87,727	7,052
1945	.....	46,600	502,442	4,914	6	16,663	1,543	145,959	81,714	542,789	.....	21,874	4,587	90	31,829	.....	105,023	9,210
1946	.....	45,177	487,904	6,728	6	17,166	1,094	165,725	70,396	525,178	.....	20,879	7,225	40	30,413	.....	119,262	5,084
†*1947*	.....	*50,440*	*544,950*	*8,259*	.....	*16,679*	*666*	*202,177*	*80,040*	*573,151*	.....	*25,479*	*39,987*	*33*	*32,549*	.....	*142,566*	*4,776*
‡1947	.....	50,630	560,510	8,392	8	17,023	877	209,231	96,459	581,398	.....	18,812	40,037	38	34,282	.....	142,740	4,600
1948	.....	53,946	570,954	8,967	27	14,062	553	245,189	70,095	686,061	.....	14,981	59,899	27	36,551	.....	194,749	4,705
1949	.....	47,788	550,903	8,490	39	12,391	334	294,078	51,851	732,845	.....	14,753	68,662	24	35,291	.....	204,961	3,693
1950	2	48,047	558,398	11,168	.....	13,285	956	364,024	73,316	831,771	373	11,250	114,153	21	39,186	17	212,909	3,336
1951	1	44,656	566,751	14,128	10	11,425	845	417,538	76,097	1,054,199	3,422	11,194	158,845	14	36,424	3,895	300,169	3,214
1952	4	42,325	517,450	34,260	15	10,183	836	412,544	73,427	1,237,143	2,372	9,052	174,100	16	28,714	5,568	359,377	3,627
1953	41	41,510	531,346	28,509	34	9,282	701	420,607	71,405	1,293,644	1,408	7,774	154,254	15	27,889	6,748	399,086	2,437
*1954	30	38,200	529,100	29,900	35	9,100	600	395,900	69,300	1,324,300	1,000	6,700	143,200	15	29,300	7,000	439,300	2,250
Total	78	968,896	12,496,134	214,480	186	315,086	566,840	5,235,978	1,657,120	15,305,949	8,575	271,205	1,034,774	11,418	685,483	23,228	3,173,308	432,066

* Estimate. † Old basis, as in prior years; excludes gas stored and lost in transmission; not included below in totals. ‡ New basis, as in subsequent years; includes gas stored and lost in transmission; included below in totals.

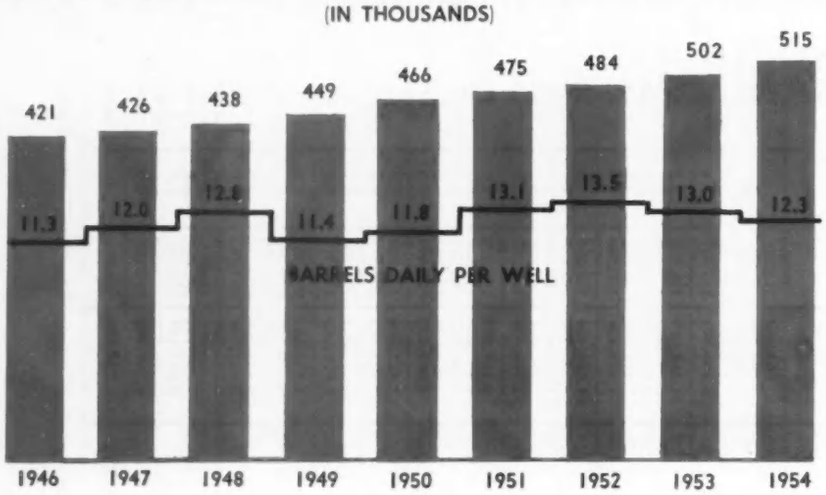
United States Marketed Production of Natural Gas, By States, By Years, Part 2

(Millions of Cubic Feet)

Sources: U. S. Bureau of Mines, except for some figures for early years which are from "Petroleum in the United States and Possessions" by Ralph Arnold and William Kemnitzer, and except where otherwise indicated by footnotes.

YEAR	North Dakota	Ohio	Oklahoma	Pennsylvania	South Dakota	Tennessee	Texas	Utah	Virginia	Washington	West Virginia	Wyoming	Others	Total United States	Value at Wells $1,000	Value at Wells ¢ Mcf.	Cost to Users $1,000	Cost to Users ¢ Mcf.
*Pre-1906	.....	305,593	2,215	1,611,066	.....	*1	815	*150	.....	.....	387,799	506	42,517	**2,961,781**	.....	.....	426,448	14.4
1906	.....	45,436	3,520	138,161	23	2	*1,000	.....	.....	.....	119,400	*100	.....	**388,843**	.....	.....	46,874	12.1
1907	2	52,041	4,867	135,516	37	2	*1,200	.....	.....	.....	122,687	*140	.....	**406,622**	.....	.....	54,222	13.3
1908	10	47,442	11,925	130,476	36	2	*1,500	.....	.....	.....	112,181	*180	.....	**402,141**	.....	.....	54,640	13.6
1909	8	53,223	28,037	127,697	23	2	*3,000	.....	.....	.....	166,435	*220	.....	**480,706**	.....	.....	63,207	13.1
1910	19	48,232	50,430	126,867	43	1	*4,000	.....	.....	.....	190,706	*253	.....	**509,155**	.....	.....	70,756	13.9
1911	13	49,450	67,276	108,869	26	1	5,503	.....	.....	.....	206,891	*265	.....	**512,993**	.....	.....	74,622	14.5
1912	*18	56,210	73,799	112,150	*36	2	7,470	.....	.....	.....	239,007	*247	.....	**562,203**	.....	.....	84,564	15.0
1913	*22	50,612	75,018	118,860	*45	2	12,160	.....	.....	.....	245,454	*273	.....	**581,898**	.....	.....	87,847	15.1
1914	*20	68,270	78,167	110,745	*41	1	13,434	.....	.....	.....	236,489	*306	.....	**591,867**	.....	.....	94,116	15.9
1915	*36	79,510	87,517	113,692	*53	2	13,324	.....	.....	.....	244,004	*321	.....	**628,579**	.....	.....	101,312	16.1
1916	*35	69,888	123,517	130,484	*43	2	15,810	.....	.....	.....	299,319	*557	.....	**753,170**	.....	.....	120,227	16.0
1917	*27	68,917	137,384	133,397	*33	11	17,047	.....	.....	.....	308,617	*1,209	.....	**795,110**	.....	.....	142,089	17.9
1918	35	61,261	124,317	123,813	42	1,827	13,440	.....	.....	.....	265,161	4,339	.....	**721,001**	.....	.....	153,554	21.3
1919	2	63,154	163,649	113,489	33	77	24,710	.....	.....	.....	234,095	6,014	.....	**745,916**	.....	.....	160,888	21.6
1920	1	58,938	154,467	125,787	20	15	37,063	.....	.....	.....	239,719	16,312	.....	**798,210**	.....	.....	196,194	24.6
1921	1	47,412	124,058	86,144	10	11	44,504	.....	.....	.....	174,921	15,608	.....	**662,052**	.....	.....	174,617	26.4
1922	1	51,481	140,631	101,276	15	3	47,945	.....	.....	.....	195,288	23,427	.....	**762,546**	84,873	11.1	221,535	29.1
1923	.....	53,812	203,082	112,562	33	4	74,535	.....	.....	.....	203,867	35,523	97	**1,006,976**	100,849	10.0	240,001	23.8
1924	.....	47,396	214,452	105,863	3	1	107,247	.....	.....	.....	182,285	46,036	73	**1,141,521**	105,779	9.3	253,856	22.2
1925	.....	43,235	249,285	101,632	4	9	134,872	.....	.....	.....	180,345	45,539	28	**1,188,571**	112,047	9.4	265,271	22.3
1926	.....	47,363	286,421	107,089	10	11	175,392	.....	.....	.....	180,223	46,567	38	**1,313,019**	124,693	9.5	300,168	22.9
1927	.....	51,381	326,864	105,709	92	9	254,063	927	.....	.....	162,375	43,582	27	**1,445,428**	127,468	8.8	317,930	22.0
1928	.....	56,341	320,861	99,466	54	.....	301,990	1,105	.....	.....	163,018	47,490	76	**1,568,139**	139,898	8.9	363,726	23.2
1929	.....	57,936	357,893	101,951	99	25	464,928	693	.....	.....	167,333	44,648	28	**1,917,693**	157,596	8.2	413,276	21.6
1930	.....	63,394	348,116	88,706	98	24	517,880	393	.....	.....	144,180	43,219	125	**1,943,421**	147,048	7.6	416,090	21.4
1931	.....	56,326	263,685	74,797	12	25	464,580	219	.....	.....	124,797	39,770	.....	**1,686,436**	117,505	7.0	392,816	23.3
1932	.....	51,466	255,487	61,611	10	22	456,832	184	.....	.....	100,540	28,938	.....	**1,555,990**	98,985	6.4	384,632	24.7
1933	.....	47,929	245,759	63,579	10	48	475,691	48	.....	111	100,653	25,830	‡ 19	**1,555,474**	97,096	6.2	368,540	23.7
1934	.....	50,330	254,457	86,238	11	12	602,976	182	.....	104	109,161	23,148	.....	**1,770,721**	106,438	6.0	395,378	22.3
1935	.....	49,592	274,313	94,464	8	.....	642,366	98	.....	138	115,772	26,643	.....	**1,916,595**	110,402	5.8	329,374	22.4
1936	.....	46,994	280,481	110,362	9	84	734,561	92	.....	141	138,076	29,322	.....	**2,167,802**	119,193	5.5	476,813	22.0
1937	.....	42,783	296,260	115,928	10	17	854,561	2,366	.....	143	149,084	31,023	.....	**2,407,620**	123,457	5.1	528,354	21.9
1938	71	35,257	263,164	76,547	10	6	882,473	4,277	.....	117	134,342	26,678	.....	**2,295,562**	113,571	4.9	500,698	21.8
1939	76	36,469	250,875	93,882	10	8	979,427	4,854	60	63	159,226	26,614	.....	**2,476,756**	120,243	4.9	534,240	21.6
1940	.....	40,639	257,626	90,725	9	9	1,063,538	5,124	80	36	188,751	27,346	.....	**2,660,222**	120,493	4.5	577,939	21.7
1941	47	41,858	234,054	92,819	7	10	1,086,312	5,567	106	1	207,681	29,284	.....	**2,812,658**	138,508	4.9	621,333	22.1
1942	122	45,055	269,704	93,532	7	10	1,170,345	5,163	92	.....	215,193	33,124	.....	**3,053,475**	154,236	5.1	692,737	22.7
1943	177	52,001	285,045	93,543	6	10	1,323,885	4,464	77	.....	223,787	34,351	.....	**3,414,689**	176,893	5.2	760,950	22.3
1944	200	51,724	310,888	92,987	5	10	1,525,515	6,223	57	.....	181,452	34,521	.....	**3,711,039**	189,809	5.1	794,271	21.5
1945	217	49,967	357,530	82,188	5	10	1,711,401	6,562	56	.....	160,225	35,282	.....	**3,918,686**	191,006	4.9	834,195	21.4
1946	344	61,570	380,938	92,443	5	47	1,776,148	4,252	57	.....	178,958	33,266	.....	**4,030,60** ‡	212,251	5.3	882,356	22.0
†*1947*	.....	*73,989*	*393,216*	*94,252*	.....	*80*	*1,932,857*	.....	.....	.....	*182,072*	*40,083*	*6,392*	*4,444,693*	*266,682*	*6.0*	*1,031,169*	*23.2*
‡1947	442	68,946	419,010	91,971	6	80	1,992,704	6,040	64	.....	192,233	45,550	.....	**4,582,173**	274,709	6.0	1,028,318	23.2
1948	643	65,619	480,573	87,578	2	127	2,289,923	6,610	74	.....	203,681	52,424	.....	**5,148,020**	333,173	6.5	1,193,559	24.1
1949	533	46,512	435,262	84,739	1	83	2,588,921	6,126	65	.....	181,176	50,815	.....	**5,419,736**	341,443	6.3	1,320,589	25.4
1950	.....	43,163	482,360	91,137	.....	132	3,126,402	.....	.....	.....	189,980	62,062	4,612	**6,282,060**	408,776	6.5	1,604,041	26.5
1951	⊙463	38,879	538,756	128,715	⊙	132	3,781,136	⧗	64	.....	191,146	⧗75,241	.....	**7,457,359**	542,964	7.3	2,118,675	29.8
1952	369	30,993	554,033	108,684	6	107	4,147,805	3,006	1,133	.....	180,995	75,313	.....	**8,013,457**	623,649	7.8	2,527,319	33.2
1953	⊙503	37,542	599,955	105,558	⊙	89	4,383,158	7,075	3,697	.....	186,477	76,262	.....	**8,396,916**	775,000	9.2	2,834,215	35.5
*1954	595	39,900	615,900	168,600	⊙	75	4,571,900	8,500	3,400	.....	188,500	77,400	.....	**8,700,000**	870,000	10.0	3,195,000	38.5
Total	5,052	2,829,442	12,363,883	6,754,094	1,101	3,200	44,927,392	90,295	9,082	854	9,373,685	1,417,088	47,640	**120,223,612**	§	§	29,894,372	24 8

* Estimate. † Old basis, as in prior years; excludes gas stored and lost in transmission; not included below in totals. ‡ New basis, as in subsequent years; includes gas stored and lost in transmission; included below in totals. § Not available. ⧗ Wyoming includes Utah. ⊙ North Dakota includes South Dakota. ‡ Others in 1933: Alaska.



Producing Oil Wells . . . exceed a half million for second straight year. U. S. total is 514,808.

FOR THE SECOND straight year, the total number of producing oil wells in the U. S. exceeded the half-million mark, with a total at the end of 1954 of 514,808 wells. This is a gain of 12,949 wells over the total of 501,859 at the end of 1953, when the industry exceeded the half-million mark for the first time.

This represents a gain of 2.5 percent in oil producing wells during the year, and is almost exactly the same percentage gain recorded for 1953, which showed an increase of 12,037 wells.

This gain during 1954 was made while completing 28,141 new oil producing wells, the largest number of new oil well completions in a single year in the industry's history.

The net gain of 12,949 producing oil wells in 1954 while 28,141 new oil wells were completed indicated that 15,192 oil wells were abandoned or shut in during the year. That was the largest number of abandonments in any year on record except 1931, when the glut of East Texas oil depressed crude prices and resulted in 22,231 abandonments.

Production of U. S. oil wells averaged only 12.3 barrels daily per well in 1954. That was less than the national average of approximately 13 barrels daily per well in 1953, 1952 and 1951.

The output of U. S. wells is relatively low when considering average production per well per day in some foreign countries. However, it must be remembered that in the 1920s, our national average was as low as 5 barrels per well per day; and the average did not reach 10 barrels until the U. S. entered World War II. Also, this is a rather remarkable average when it is considered that nearly one fourth of all producing oil wells in the U. S. are located in Pennsylvania, New York, Indiana, Michigan and West Virginia, states noted for stripper production, where many wells produce less than 4 or 5 barrels daily.

With U. S. crude production curtailed in December, 1954, the 514,808 producing oil wells at the close of the year were averaging output of only 12.1 barrels daily per well. Similarly, reduced December production a year earlier depressed output of the 501,859 oil wells at the end of 1953 to 12.2 barrels daily per well.

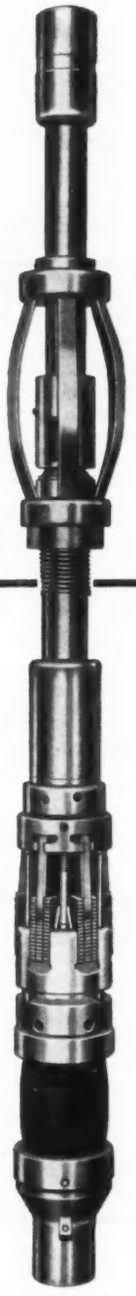
In addition to crude oil wells, there were 5050 gas/condensate wells in the U. S. at the end of 1954, producing an average of 21.2 barrels daily per

U. S. Producing Oil Wells and Daily Output Per Well, by Years

Sources: Producing wells and output from Bureau of Mines except as noted. Wells completed from WORLD OIL and predecessor, The Oil Weekly, except 1918-1920 from Bureau of Mines. Output per well obtained by dividing daily average U. S. production for year by average number between wells producing Jan. 1 and Dec. 31.

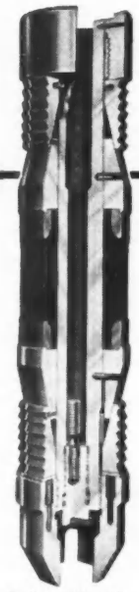
YEAR	Wells Producing at Year End	Changes During Year: Wells Completed	Changes During Year: *Wells Abandoned	Changes During Year: †Net Gain in Wells	Bbls. Prod. per Well per Day
1918	203,375	17,860	.....	.....	....
1919	227,000	21,041	—2,584	23,625	4.8
1920	251,000	24,278	278	24,000	5.0
1921	274,500	14,715	—8,785	23,500	4.9
1922	284,880	17,790	7,410	10,380	5.7
1923	290,100	16,182	10,962	5,220	6.6
1924	299,100	14,707	5,707	9,000	6.2
1925	306,100	17,029	10,029	7,000	6.5
1926	318,600	18,626	6,126	12,500	6.8
1927	323,300	14,382	9,682	4,700	7.7
1928	327,800	12,348	7,848	4,500	7.6
1929	328,200	15,362	14,962	400	8.4
1930	331,070	11,693	8,823	2,870	7.5
1931	315,850	7,011	22,231	—15,220	7.2
1932	321,500	10,530	4,880	5,650	6.7
1933	326,850	8,070	2,720	5,350	7.7
1934	333,070	13,119	6,899	6,220	7.5
1935	340,990	15,418	7,498	7,920	8.1
1936	349,450	18,704	10,244	8,460	8.7
1937	363,030	23,115	9,535	13,580	9.8
1938	369,640	19,106	12,496	6,610	9.1
1939	380,390	17,734	6,984	10,750	9.2
1940	389,010	19,843	11,223	8,620	9.6
1941	399,960	19,590	8,640	10,950	9.7
1942	404,840	10,977	6,097	4,880	9.4
1943	407,170	9,887	7,557	2,330	10.2
1944	412,220	13,502	8,452	5,050	11.2
1945	415,750	13,944	10,414	3,530	11.3
1946	421,460	16,087	10,377	5,710	11.3
1947	426,280	17,613	12,793	4,820	12.0
1948	437,880	22,197	10,597	11,600	12.8
1949	448,680	21,415	10,615	10,800	11.4
1950	465,870	23,775	6,585	17,190	11.8
1951	474,990	23,532	14,412	9,120	13.1
1952	488,520	23,371	9,841	13,530	13.0
1952‡	489,822	23,371	9,886	13,485	12.8
1953‡	501,859	25,323	13,286	12,037	13.0
1954‡	514,808	28,141	15,192	12,949	12.3

* Wells abandoned or shut in. Minus sign (—) indicates shut in wells put on production. † Minus sign (—) indicates decrease in producing wells. ‡ WORLD OIL estimate.



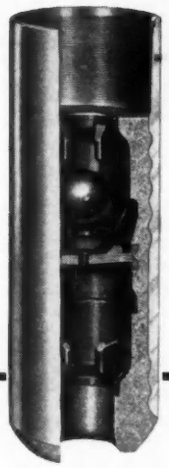
Baker Retrievable Cementer
Product No. 411-RT

Baker Cement Wash-Down Whirler Float Shoe
Product No. 120



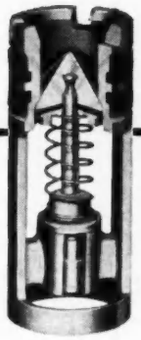
Baker Wire Line Bridge Plug
Product No. 400-N

Baker ROTO-VERT Casing Scraper
Product No. 620-C



Baker FLEXIFLOW Fill-Up Shoe
Product No. 160

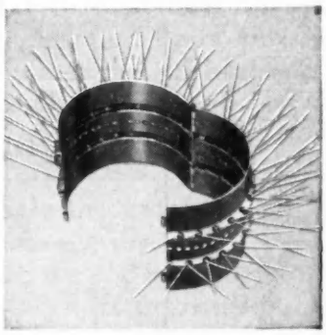
Baker Differential FILL-UP Shoe
Product No. 1081



Baker Drill Pipe Float Valve
Product No. 4813

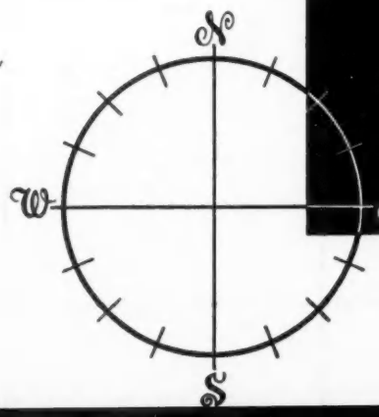
Baker Cement Retainer
Product No. 400

Baker HINGE-LOK Casing Centralizer (H-25)
Product No. 9113



Baker Wall Scratcher
Product No. 900

The Baker Section starts on Page 435 of your 1954 Composite Catalog; or if you prefer a separate BAKER Catalog, contact the office nearest you.



BAKER
OIL TOOLS, INC.
HOUSTON · LOS ANGELES · NEW YORK

well of lease condensate. This compares with 4327 condensate wells which averaged 21.8 barrels production per day at the end of 1953.

Combined crude and condensate wells at the end of 1954 totaled 519,858, and they averaged 12.2 barrels of liquid hydrocarbon production daily per well. This compares with a total of 506,186 wells in 1953 which produced an average of 12.3 barrels per well per day.

U. S. Wells Producing Crude Oil and Lease Condensate, Methods of Producing, and Average Output Per Well, by States and Districts, at End of 1954

Data include only wells producing crude oil and lease condensate, handled as crude. Figures do not include inactive or shut-in wells, gas wells, or gas/condensate wells yielding condensate production through operation of plants. Data compiled by WORLD OIL, with cooperation of state conservation departments and other sources.

STATE or DISTRICT	CONDENSATE WELLS			CRUDE OIL WELLS					TOTAL CRUDE OIL AND CONDENSATE WELLS		
		Bbls. Daily Prod.					Bbls. Daily Prod.			Bbls. Daily Prod.	
	Wells	Total	Per Well	Flowing	Art. Lift	Total Wells	Total	Per Well	Wells	Total	Per Well
Alabama				**5**	**108**	**113**	**3,900**	**34.5**	**113**	**3,900**	**34.5**
Arkansas	**73**	**400**	**5.5**	**270**	**3,925**	**4,195**	**71,850**	**17.1**	**4,268**	**72,250**	**16.9**
California				**1,770**	**31,303**	**33,073**	**967,400**	**29.3**	**33,073**	**967,400**	**29.3**
San Joaquin Valley				1,023	15,967	16,990	398,100	23.4	16,990	398,100	23.4
Coastal District				572	4,702	5,274	249,600	47.3	5,274	149,600	47.3
Los Angeles Basin				175	10,634	10,809	319,700	29.6	10,809	319,700	29.6
Colorado				**97**	**1,633**	**1,730**	**140,450**	**81.2**	**1,730**	**140,450**	**81.2**
Florida					**13**	**13**	**1,400**	**107.7**	**13**	**1,400**	**107.7**
Illinois				**10**	**35,155**	**35,165**	**194,900**	**5.5**	**35,165**	**194,900**	**5.5**
Indiana				**3**	**4,954**	**4,957**	**29,000**	**5.9**	**4,957**	**29,000**	**5.9**
***Kansas**				**31**	**34,523**	**34,554**	**319,700**	**9.3**	**34,554**	**319,700**	**9.2**
Kentucky					**16,593**	**16,593**	**39,200**	**2.4**	**16,593**	**39,200**	**2.4**
Louisiana	**1,872**	**48,500**	**25.9**	**4,937**	**9,588**	**14,525**	**596,750**	**41.1**	**16,397**	**645,250**	**39.4**
North Louisiana	840	2,900	3.5	808	7,611	8,419	101,200	12.0	9,259	104,100	11.2
South Louisiana	1,032	45,600	44.2	4,129	1,977	6,106	495,550	81.2	7,138	541,150	75.8
Michigan				**190**	**3,842**	**4,032**	**32,000**	**7.9**	**4,032**	**32,000**	**7.9**
Mississippi	**238**	**3,850**	**16.2**	**319**	**1,547**	**1,866**	**89,450**	**47.9**	**2,104**	**93,300**	**44.3**
Missouri				**0**	**89**	**89**	**50**	**0.6**	**89**	**50**	**0.6**
***Montana**				**110**	**3,641**	**3,751**	**37,850**	**10.1**	**3,751**	**37,850**	**10.1**
Nebraska					**547**	**547**	**22,550**	**41.2**	**547**	**22,550**	**41.2**
Nevada					**1**	**1**	**250**	**250.0**	**1**	**250**	**250.0**
New Mexico	**139**	**2,550**	**18.3**	**3,710**	**3,656**	**7,366**	**209,700**	**28.5**	**7,505**	**212,250**	**28.3**
Northwest New Mexico				13	65	78	1,350	17.3	78	1,350	17.3
Southeast New Mexico	139	2,550	18.3	3,697	3,591	7,288	208,350	28.6	7,427	210,000	28.3
New York					**22,500**	**22,500**	**11,200**	**0.5**	**22,500**	**11,200**	**0.5**
North Dakota				**353**	**88**	**441**	**24,300**	**55.1**	**441**	**24,300**	**55.1**
Ohio				**90**	**15,210**	**15,300**	**10,850**	**0.7**	**15,300**	**10,850**	**0.7**
***Oklahoma**				**2,860**	**64,551**	**67,411**	**496,900**	**7.4**	**67,411**	**496,900**	**7.4**
Pennsylvania					**80,000**	**80,000**	**19,750**	**0.2**	**80,000**	**19,750**	**0.2**
South Dakota					**2**	**2**	**150**	**75.0**	**2**	**150**	**75.0**
Tennessee					**44**	**44**	**50**	**1.1**	**44**	**50**	**1.1**
Texas	**2,707**	**50,500**	**18.7**	**47,032**	**100,712**	**147,744**	**2,652,400**	**18.0**	**150,451**	**2,702,900**	**18.0**
Dist. 1: South Central	35	400	11.4	381	4,530	4,911	45,850	9.3	4,946	46,250	9.4
Dist. 2: Middle Gulf	620	8,200	13.2	3,326	1,793	5,119	136,950	26.8	5,739	145,150	25.3
Dist. 3: Upper Gulf	805	23,200	28.8	5,119	6,545	11,664	415,700	35.6	12,469	438,900	35.2
Dist. 4: Lower Gulf-S.W.	426	5,850	13.7	5,369	6,403	11,772	233,750	19.9	12,198	239,600	19.6
Dist. 5: East Central	89	400	4.5	452	2,059	2,511	43,000	17.1	2,600	43,400	16.7
Dist. 6: Northeast	405	4,950	12.2	1,261	2,360	3,621	113,850	31.4	4,026	118,800	29.5
Dist. 6: East Texas Field				10,877	9,344	20,221	215,850	10.7	20,221	215,850	10.7
Dist. 7-B: North Central	41	50	1.2	2,363	9,944	12,307	129,500	10.5	12,348	129,550	10.5
Dist. 7-C: West Central	88	4,500	51.1	2,798	3,198	5,996	174,850	29.2	6,084	179,350	29.5
Dist. 8: West	76	2,250	29.6	13,337	21,744	35,081	867,200	24.7	35,157	869,450	24.7
Dist. 9: North	109	600	5.5	1,617	24,245	25,862	191,900	7.4	25,971	192,500	7.4
Dist. 10: Panhandle	13	100	7.7	132	8,547	8,679	84,000	9.7	8,692	84,100	9.7
Utah				**1**	**81**	**82**	**5,350**	**65.2**	**82**	**5,350**	**65.2**
Virginia					**25**	**25**	**100**	**4.0**	**25**	**100**	**4.0**
West Virginia					**13,000**	**13,000**	**7,100**	**0.5**	**13,000**	**7,100**	**0.5**
Wyoming	**21**	**1,100**	**52.4**	**368**	**5,321**	**5,689**	**265,950**	**46.7**	**5,710**	**267,050**	**46.8**
Total **U.S. End 1954**	**5,050**	**106,900**	**21.2**	**62,156**	**452,652**	**514,808**	**6,250,500**	**12.1**	**519,858**	**6,357,400**	**12.2**
† Total U.S. End 1953	4,327	94,350	21.8	59,465	442,394	501,859	6,130,050	12.2	506,186	6,224,400	12.3

* A limited number of gas-condensate wells are included with oil wells

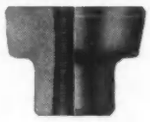
† Data by states in WORLD OIL, Feb. 15, 1954, page 174.

RECTOR type "M"

..the Tubing Head that's WAY ahead

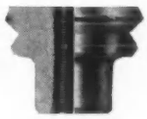
..in Flexibility

MANDREL HANGERS



Type "A" Mandrel Hanger threaded for EUE or regular tubing.

Type "M" Stripper for tubing heads with locking screws.

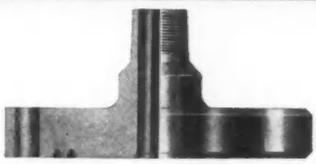


Type "A-O" Mandrel Hanger threaded, also grooved for locking screws. The "O" Ring serves as temporary seal.

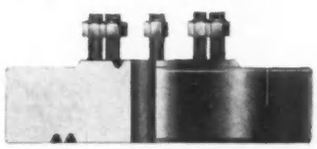
Type "WM" Wrap-Around Mandrel. It is hinged to wrap around tubing; also grooved for locking screws.

Type "C" "Slick Joint" Mandrel grooved for locking screws. The "O" Ring serves as temporary seal.

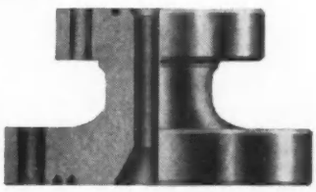
BONNETS



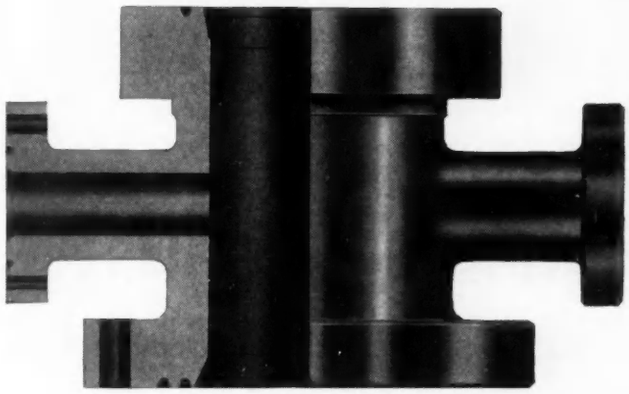
Male threaded bonnet also available with underside female threaded to hang tubing.



Studded bonnet also available with underside female threaded to hang tubing.



Spool-type bonnet also available with underside female threaded to hang tubing.



• The wide range of body types (6), the complete range of pressures (2,000 to 15,000 lb. test), the variety of mandrel hangers and bonnets (10) . . . all of which are interchangeable in the bodies, plus auxiliary equipment, make it possible to select a Rector Type "M" Tubing Head for every well completion condition and preference.

Every one of these heads employs the proven Rector principle of sealing with steel . . . a single API Ring Gasket acting dually as seal and hanger hold-down. There are no soft or resilient seals in these heads to deterioriate, burn out, freeze or contract in extremely low temperatures.

When planning well completions . . . specifying Christmas Trees . . . specify a Rector Type "M" Tubing Head for the utmost in safety and flexibility.

For complete specifications of all Type "M" Tubing Heads, Mandrels and Bonnets, see the Composite Catalog.

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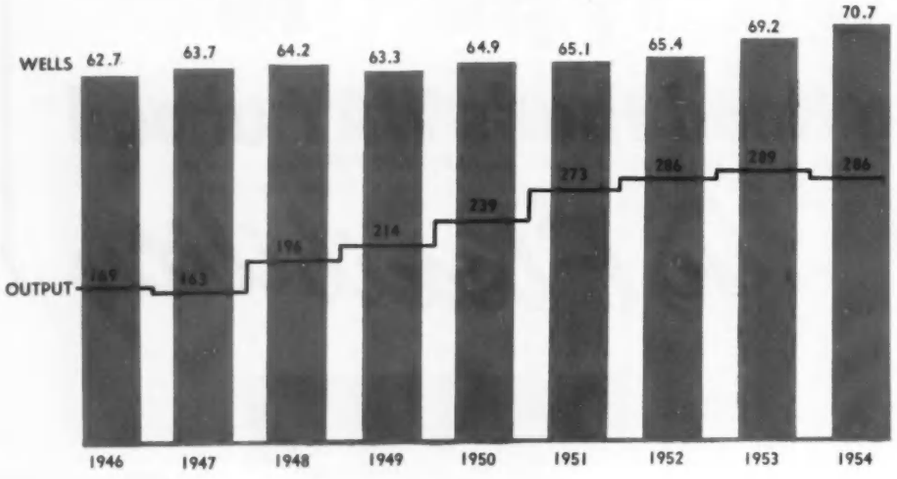
U. S. PRODUCING GAS WELLS AND OUTPUT PER WELL

(WELLS IN THOUSANDS. OUTPUT IN THOUSANDS OF CUBIC FEET DAILY)



Producing Gas Wells . . . Gas and gas-condensate wells total 70,686 at end of 1954.

THE U. S. REACHED the end of 1954 with 70,686 gas and gas-condensate producing wells, as surveyed by WORLD OIL, to introduce this new statistical feature. For the first time, gas and condensate wells have been counted separately. Results of this effort are tabulated on this page.

In years prior to 1953, data herewith are from the U. S. Bureau of Mines, which combines gas and condensate wells and has not yet made data available for 1953 and 1954. The large gain in producing wells between 1952 and 1953 may be accounted for by the fact that data comes from two different sources. Nevertheless, all the figures reflect vigorous natural gas development.

The 70,686 gas and condensate wells producing at the end of 1954 compared with 69,218 at the end of 1953, an increase of 1468 wells. This was the net gain in a year when 4038 new gas and condensate wells were completed, indicating that 2570 wells were abandoned or shut in during the year. That was about a normal number of abandonments.

Average production per well per day during 1954 was in line with previous years. The output per well in 1954 was about 286,000 cubic feet per day, the same as in 1952, but a little less than the 289,000 daily of 1953. The average output per U. S. well is held down by the large number of gas wells located in the old fields of Pennsylvania, West Virginia, Ohio, and Kentucky.

U. S. Gas and Gas-Condensate Wells Producing at End of Year, 1953 and 1954

Data include: Wells producing gas exclusively; wells producing lease condensate except where shown as yielding plant condensate; no wells producing crude oil; no shut in wells.

State or District	END OF 1953		END OF 1954	
	Gas Wells	Gas-Cond. Wells	Gas Wells	Gas-Cond. Wells
Arkansas	219	78	202	73
California	327	73	350	83
San Joaquin Valley	312	*73	333	*83
Coastal District	11	....	16	....
Los Angeles Basin	4	....	1	....
Colorado	55	....	75	....
Illinois	30	....	25	....
Indiana	550	....	500	....
Kansas	4,600	....	4,900	†
Kentucky	3,900	....	4,100	....
Louisiana	2,268	1,632	2,303	1,872
North Louisiana	2,144	754	2,182	840
South Louisiana	124	878	121	1,032
Michigan	360	....	340	....
Mississippi	100	135	110	238
Missouri	2	....	2	....
Montana	935	....	950	†
Nebraska	25	....	35	....
New Mexico	1,335	217	1,717	406
Northwest N.M.	900	*175	1,185	*267
Southeast, N.M.	435	42	532	139
New York	1,340	....	1,320	....
Ohio	6,975	....	6,850	....
Oklahoma	3,900	....	4,000	†
Pennsylvania	16,700	....	16,500	....
Tennessee	27	....	28	....
Texas	7,686	2,424	8,159	2,707
Dist. 1: S. Central	23	32	36	35
Dist. 2: Mid. Gulf	615	540	654	620
Dist. 3: U. Gulf	526	771	607	805
Dist. 4: L.Gulf-SW.	1,163	348	1,221	426
Dist. 5: E. Cent.	38	71	48	89
Dist. 6: Northeast	930	407	1,079	405
Dist. 7-B: N. Cent.	416	47	424	41
Dist. 7-C: W. Cent.	27	76	25	88
Dist. 8: West	214	60	189	76
Dist. 9: North	86	65	88	109
Dist. 10: Panhandle	3,648	7	3,788	13
West Virginia	13,000	....	12,500	....
Wyoming	200	16	220	21
Miscellaneous‡	109	....	100	....
Total U. S.	64,643	4,575	65,286	5,400

* Wells yielding condensate through operation of plants.
† Limited number of gas-condensate wells in state included with oil wells in table on another page.
‡ Ala., Md., N.D., S.D., Utah, Va.

U. S. Producing Gas Wells and Daily Output Per Well, by Years

(Including gas-condensate wells)

Sources: Bureau of Mines except as noted. Output per well obtained by dividing daily average gross production from gas wells for year by average number between wells producing Jan. 1 and Dec. 31.

YEAR	Wells Producing at Year End	Changes During Year: [1]Wells Completed	[2]Wells Abandoned	[3]Net Gain in Wells	[4]Mcf. Prod. Per Well Per Day
1929	[5]53,545	3,107	[6]	[6]	[6]
1930	[5]55,020	2,971	1,496	1,475	[6]
1931	[5]55,756	2,067	1,331	736	[6]
1932	[5]54,156	1,079	2,679	—1,600	[6]
1933	[5]53,660	1,190	1,686	—496	[6]
1934	54,130	1,496	1,026	470	[6]
1935	53,790	1,802	2,142	—340	[6]
1936	54,500	2,375	1,665	710	75
1937	55,050	2,732	2,182	550	81
1938	53,770	2,143	3,423	—1,280	79
1939	55,530	2,030	270	1,760	92
1940	53,880	2,265	3,915	—1,650	105
1941	55,500	3,279	1,659	1,620	125
1942	56,150	2,790	2,140	650	142
1943	57,200	2,390	1,340	1,050	155
1944	58,780	3,078	1,498	1,580	172
1945	60,600	3,192	1,372	1,820	178
1946	62,740	3,562	1,422	2,140	169
1947	63,676	3,720	2,784	936	163
1948	64,212	3,312	2,776	536	196
1949	63,346	3,499	4,365	—866	214
1950	64,900	3,480	1,926	1,554	239
1951	65,100	3,542	3,342	200	273
1952	65,450	3,693	3,343	350	286
1953	[1]69,218	4,232	464	3,768	289
1954	[1]70,686	4,038	2,570	1,468	286

[1] WORLD OIL data. [2] Wells abandoned or shut in. Minus sign (—) indicates shut in wells put on production. [3] Minus sign (—) indicates decrease in producing wells. [4] Thousand cubic feet. [5] Average during year. [6] Not available.

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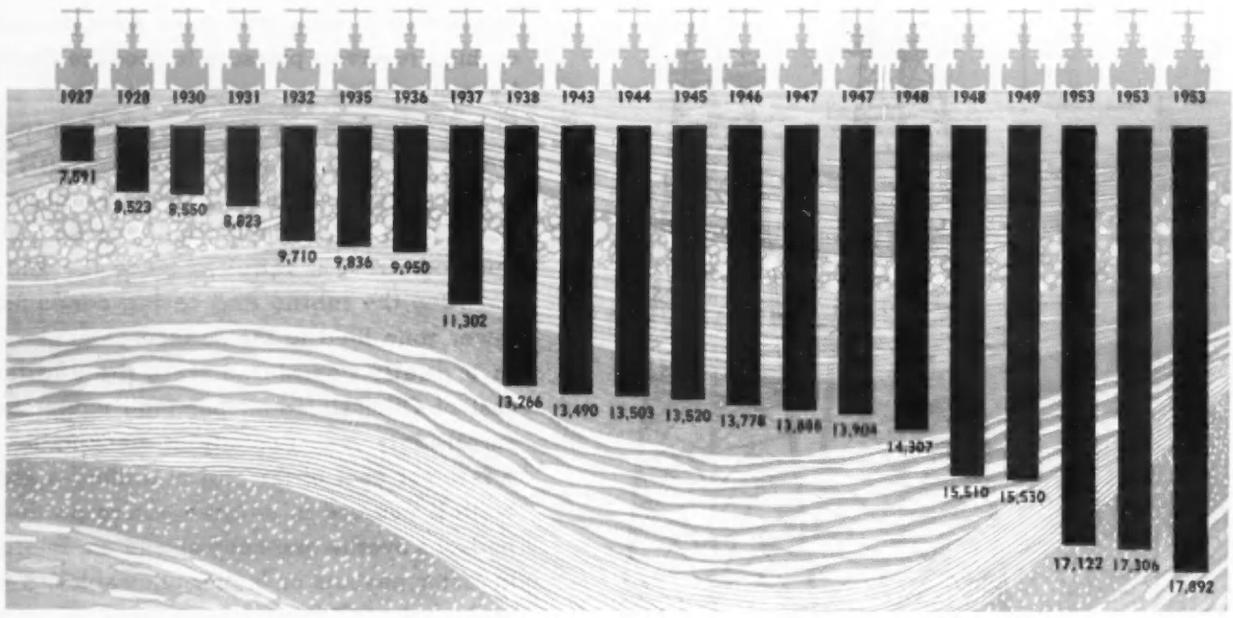
Producing Depth Records . . . Seven area marks replaced.

THE NATION'S top producing depth records remained steadfast during 1954 despite some deep drilling that produced a scattering of sectional or state marks.

In contrast to the 1953 performance in which three of the four presently standing records were made, the recent year produced only two producers that were deep enough to be listed among the ten deepest sectional producers of all time. These were a condensate well finaled at 12,445 feet by Tide Water Associated Oil Company in the New Hope area of Franklin County, East Texas, and an oil well brought in from 12,067 feet by Vaughey & Vaughey in the Soso field



Holders of Record as Deepest Producing Well in U. S., Since 1927

Year Drilled	WELL AND LOCATION	Production	Bottom of Pay (Feet)
1927	E. J. Miley's Athens 6, Rosecrans field, California	....	7,591
1928	Texon Oil & Land Co.'s University 1-B, Big Lake field, West Texas	Oil	8,523
1930	Star Petroleum Co.'s Colby 2, Long Beach, California	....	8,550
1931	Tide Water Associated Oil Co.'s Lloyd 57, Ventura Avenue field, California	Oil	8,823
1932	Tide Water Associated Oil Co.'s Lloyd 83, Ventura Avenue field, California	Oil	9,710
1935	Tide Water Associated Oil Co.'s Lloyd 131, Ventura Avenue field, California	Oil	9,836
1936	The Texas Co.'s Lafitte 5, Lafitte field, South Louisiana	....	9,950
1937	Union Oil Co.'s Kerneo 85-34, Rio Bravo field, Kern County, California	Oil	11,302
1938	Fohs Oil Co.'s Buckley-Bourg 1, DeLarge field, South Louisiana	*Cond.	13,266
1943	Union Producing Co.-Fohs Oil Co.'s Fitzpatrick-Vizard 1, DeLarge field, South Louisiana	*Cond.	13,490
1944	Union Producing Co.-Fohs Oil Co.'s Buckley-Bourg 2, DeLarge field, South Louisiana	Oil	13,503
1945	Shell Oil Co.'s Smith-State Unit 1-1, Weeks Island field, South Louisiana	Oil	13,520
1946	Shell Oil Co.'s Smith-State Unit 1-2, Weeks Island field, South Louisiana	Oil	13,778
1947	Shell Oil Co.'s Smith-State Unit 1-3, Weeks Island field, South Louisiana	Oil	13,888
1947	The Texas Co.'s LaFourche Basin Levee Dist. 1, Queen Bess Island field, South Louisiana	*Cond.	13,904
1948	Pure Oil Co.'s Unit 1, West Poison Spider field, Wyoming	Oil	14,307
1948	Denver Producing & Refg. Co.'s School Land 1-A, Cogar field, Caddo County, Oklahoma	Gas	15,510
1949	Standard Oil Co. of California's Mushrush 5, Wasco field, Kern County, California	Oil	15,530
1953	Shell Oil Co.'s Weeks-Gall Unit 1-1, Weeks Island field, South Louisiana	Oil	17,122
1953	Shell Oil Co.'s Gonsoulin Minvielle-State Unit 2, Weeks Island field, South Louisiana	Oil	17,306
1953	Richfield Oil Corp.'s Coles Levee "A" 67-29, Coles Levee, North field, California	Oil	17,892

*Gas — Condensate Production.

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of Jasper County, Mississippi. The latter well actually achieved the honor by default after a Gulf Refining Company producer drilled to 13,082 feet in 1947 in the West Ovett field, Jones County, Mississippi, was plugged back to the Eutaw.

Of the five others that mounted to the head of the list of deepest sectional producers, three were the first discoveries within their respective states. Shell Oil Company was responsible for all of them. A Shell well got oil from 8691 feet in Harding County for South Dakota's first production; a Shell well got oil from 6730 feet in Nye County for Nevada's first producer; and a Shell attempt tapped gas at 4976 feet in Apache County for Arizona's first discovery.

The other two deepest sectional producers finaled during the year were North Dakota's 10,656-footer completed by Stanolind Oil & Gas Company in McKenzie County; and Tennessee's 3107-footer completed by Greenup-David et al in Anderson County. This was the shallowest sectional record-breaker recorded during the year and is only two notches from the bottom of the entire list. Shallowest record-holder of them all is Missouri's 1444-footer, drilled in 1940. Oldest record producer is Kentucky's 5170-footer. When this well was drilled in 1932 it compared with the world's deepest. The record for that year was a 9710-foot producer drilled in California.

The seven sectional records established during the recent year exactly matched the number tumbled in 1953. The latter's performance was more impressive, however, in that it brought forth three of the four deepest producers ever drilled. The year 1952 produced ten area records and there were an even dozen in 1951.

Illustrative of the tremendous strides in deepening production in recent years is the fact that of the 36 producing areas in the U. S., 23 have had new record production during the 1950's. The Kentucky well is the only one on the list drilled before 1940.

Lack of a new U. S. record-breaker during the recent year left California and South Louisiana tied for the honor of having the most record depth producers in modern history. Each has had eight.

Producing Depth Records in U. S., by States and Districts, and by 1,000-Foot Intervals

State or District	Bottom of Pay (Feet)	Year Drilled	Well and Location	Producing Formation	Production
California	**17,895**	1953	Richfield Oil's Coles Levee "A" 67-29, Coles Levee field, Kern Co.	Eocene	*Oil
S. Louisiana	**17,306**	1953	Shell's Gonsoulin Minvielle-State Unit 2, in 41e-14s-7e, Weeks Island	.....	†Cond.
Oklahoma	**15,510**	1948	Denver Prod. & Ref. Co's. School Land 1-A, Cogar field, Caddo Co.	Viola	Gas
West Texas	**15,324**	1953	Phillips Pet. Co's. Odom 1-A, Puckett field, Pecos County	Ellenburger	†Cond.
Wyoming	**14,307**	1948	Pure Oil Co's. Unit 1, West Poison Spider field, Natrona County	2nd Frontier	Oil
Texas Gulf	**13,950**	1952	Phillips Pet. Co's. Schenck, 2-A. Chocolate Bayou field, Brazoria Co.	Frio	†Cond.
N. Mex., S.E.	**13,573**	1952	Buffalo Oil Co's. M. E. Baish-Federal 12-B, in 2-17s-32e, Maljamar	Devonian	Oil
Montana	**12,605**	1953	Sun Oil & Phillips Pet. Dynneson 1, in 32-24n-58e, Richland County	Red River	Oil
East Texas	**12,445**	1954	Tide Water's Campbell Unit 1-D, New Hope area, Franklin County	Jurassic	†Cond.
Mississippi	**12,067**	1954	Vaughey & Vaughey et al's Edwards-Abram Unit 1, Soso field, Jasper Co.	Rodessa	Oil
Florida	**11,588**	1948	Humble's Lee Tidewater Cypress Lbr. Co. 1-B, Suniland field, Collier Co.	L. Cretaceous	Oil
S.W. Texas	**11,555**	1952	Humble's Robert J. Kleberg, Jr. Tr. 1, Viboras field, Brooks County	Vicksburg	†Cond.
N. Louisiana	**11,310**	1953	A. J. Hodges Ind., Inc's. Pardee-Callaway et al 1, Cotton Valley field	Smackover	†Cond.
N. Dakota	**10,656**	1954	Stanolind's New Year Many Ribs 1, SW NW 28-152n-94w, McKenzie Co.	Sanish	Oil
Utah	**10,244**	1952	Phillips & Carter's Peterson Unit E-11, Roosevelt field, Unitah County	Wasatch	Oil
N. Tex.-Pan.‡	**9,606**	1953	Standard Oil of Texas' H. L. Rising 7, Sherman field, Grayson County	Ordovician	Oil
Arkansas	**9,453**	1952	Carter Oil Co's. McKamie-Patton Unit C-216-1, McKamie-Patton field	Smackover	Oil
Colorado	**9,435**	1950	Delhi Oil Corp's Barker 5, Barker Dome field, La Plata County	Paradox	Gas
N. Mex., N.W.	**8,875**	1945	Southern Union Gas Co's. Barker-Ute Indian 11, Barker Creek field	Paradox	Gas
S. Dakota	**8,691**	1954	Shell Oil Company's State 1-A, Section 9-21n-4e, Harding County	Red River	Oil
W. Virginia	**8,410**	1946	Ohio Oil Co's. Kuykendall et al 1, Dry Fork Dist., Tucker County	Oriskany	Gas
Pennsylvania	**8,229**	1949	Peoples Nat. Gas Co's. Wm. Piper 1, Unity Twp., Westmoreland Co.	Devonian	Gas
Nebraska	**7,354**	1951	Gulf Oil's Sisson 1, in 18-12n-50w, Sisson field, Kimball County	Dakota "J"	Oil
Nevada	**6,730**	1954	Shell Oil Co's. Unit 1, SW NE NW 35-9n-57e, Nye County	Tertiary	Oil
Michigan	**6,638**	1952	Brazos O&G's State-Chester HE-1, 15-29n-2w, Chester Twp., Otsego Co.	Basal Salina	Oil
Kansas	**6,278**	1953	Alladin Pet's. Ide-Larrabee 1, SW NE NE 16-35s-33w, Seward County	Mississippian	Gas
Alabama	**6,117**	1952	Humble's A. W. Moye et ux 5, in 18-1n-89e, Pollard, Escambia County	Massive	Oil
Ohio	**5,880**	1946	Frank Lyon's Anita B. Wright 1, Hanover Twp., Columbiana County	Clinton	Gas
New York	**5,229**	1942	E. Kent Kane's Robert Lewis 1, West Union Township, Steuben County	Oriskany	Gas
Kentucky	**5,170**	1932	United Carbon Company's Howe 1, Pike County	Devonian	Gas
Arizona	**4,976**	1954	Shell Oil Company's Navajo 1, SE SE 6-41n-29e, Apache County	Hermosa	Gas
Illinois	**4,780**	1943	Kingwood Oil Co's. Shanafelt 24-A, Salem field, Marion County	Trenton	Oil
Maryland	**4,456**	1949	Cumberland & Allegheny Gas's Elmer N. Beachy S-424, Garrett, County	Huntersville	Gas
Tennessee	**3,107**	1954	Greenup-David et al's Coal Creek 1, in 22-4s-64e, Anderson County	.....	Gas
Indiana	**3,011**	1946	H. E. Ledbetter et al's Noble Utley 1, Springfield field, Posey County	McClosky	Oil
Missouri	**1,444**	1940	Cities Service Oil Co's. Jim Cook 1, Tarkio field, Atchison County	Bartlesville	Oil

* Now idle. † Gas—Condensate Production. ‡ North Texas and Panhandle.

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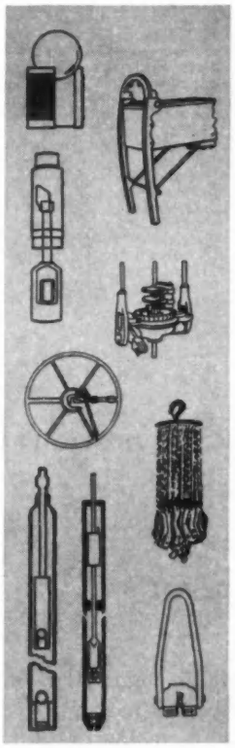

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Year	Gallons (in Thousands)	Percent Increase	Domestic & Motor Fuel*	Percent Increase	Industrial Miscellaneous[1]	Percent Increase	Gas Mfg.	Percent Increase	Chemical Mfg.	Percent Increase	Rubber Components	Percent Increase
1922	223	.....										
1923	277	24.4	Sale of Liquefied Petroleum Gas Confined Primarily to Bottled Gas Business Prior to 1928									
1924	376	36.0										
1925	404	7.2										
1926	465	15.2										
1927	1,091	134.6										
1928	4,523	314.6	2,600	.....	400	.....	1,500	.....	.....	.....	.....	.....
1929	9,931	119.6	5,900	126.9	1,500	275.0	2,500	66.7	.....	.....	.....	.....
1930	18,017	81.4	11,800	100.0	2,200	46.7	4,000	60.0	.....	.....	.....	.....
1931	28,770	59.7	15,295	29.6	7,172	226.0	6,303	57.6	.....	.....	.....	.....
1932	34,115	18.6	16,244	6.2	8,167	13.9	9,703	53.9	.....	.....	.....	.....
1933	38,931	14.1	16,626	2.3	13,987	71.3	8,318	—14.3	.....	.....	.....	.....
1934	56,427	44.9	17,681	6.3	32,448	132.0	6,298	—24.3	.....	.....	.....	.....
1935	76,855	36.2	21,380	20.9	47,894	47.6	7,581	20.4	.....	.....	.....	.....
1936	106,652	38.8	30,014	40.4	67,267	40.4	9,371	23.6	.....	.....	.....	.....
1937	141,400	32.6	40,823	36.0	62,610	[2]	11,175	19.3	26,792	.....	.....	.....
1938	165,201	16.8	57,832	41.7	62,694	0.0	12,386	10.8	32,299	20.5	.....	.....
1939	223,580	35.3	87,530	51.4	93,723	49.4	15,435	24.6	26,892	—16.7	.....	.....
1940	313,456	40.2	134,018	53.1	124,482	32.8	20,285	31.4	34,671	29.0	.....	.....
1941	462,852	47.7	220,722	64.7	172,669	68.6	25,255	24.5	44,206	27.5	.....	.....
1942	585,440	26.5	303,857	37.6	197,179	14.2	31,366	24.2	53,038	20.0	.....	.....
1943	675,233	15.3	344,962	13.6	237,396	20.4	37,519	19.6	55,356	4.4	.....	.....
1944	1,060,156	[4]	445,617	29.2	254,590	7.3	45,879	22.3	151,985	175.0	162,085	.....
1945	1,276,766	20.4	533,262	19.7	256,577	0.8	53,849	17.4	224,291	47.5	208,787	28.8
1946	1,704,262	33.5	758,466	42.2	253,745	—1.1	86,660	61.0	311,499	38.8	293,892	40.8
1947	2,209,797	29.7	1,150,538	51.7	274,125	8.0	169,332	95.4	414,267	33.0	201,535	—31.4
1948	2,736,801	23.8	1,473,289	28.1	275,883	0.6	237,638	40.3	524,350	26.6	225,641	11.9
1949	2,836,599	3.6	1,627,550	10.5	247,103	—10.4	239,210	0.6	544,886	3.9	177,850	—21.1
1950	3,482,567	22.8	2,022,464	24.3	355,456	[3]	251,694	5.2	624,468	14.6	228,485	28.5
1951	4,227,275	21.4	2,456,804	21.6	269,408	[3]	281,692	11.9	844,507	35.2	374,864	64.1
1952	4,477,379	5.9	2,636,736	7.4	338,959	26.0	259,697	—7.8	870,990	3.1	370,997	— 1.1
1953	4,932,009	10.2	2,977,418	12.9	374,233	1.04	222,430	—14.4	967,427	11.1	390,501	5.3
1954	5,084,901	3.1	3,200,633	7.5	381,718	2.0	207,972	—6.5	977,101	1.0	317,477	—18.7

* Household use plus other requirements by these customers such as irrigation pumping, tractor fuel, flame weeding, chicken brooding and similar uses. Included also is LPG sold by domestic distributors but used for industrial purposes. Included also, in years following 1950, is LPG sold direct by producers and marketers solely for fueling internal combustion engines.

[1] For all years prior to 1951, include LPG sold for refueling internal combustion engines.

[2] Not comparable due to segregation of chemical manufacturing.

[3] Not comparable due to change in method of reporting LPG sold for refueling internal combustion engines.

[4] Not comparable due to inclusion of rubber components.

REMARKS: In this table total sales for all years except 1954 were obtained from U.S. Bureau of Mines reports. Distribution for the years 1931 to 1953, inclusive, was obtained from the same source. All other volumes were estimated by the writers. The total sales volumes includes all LPG (propane, butane, and propane-butane mixtures) when sold as such. Until 1944 the sale of pentane when sold for any purpose other than motor fuel blending was included. Since then it has been excluded. It does not include butane when blended with heavier petroleum fractions for motor gasoline purposes. Inter-company sales transactions such as purchases of LPG by one company from other companies and resold as LPG have been eliminated in order to avoid duplication of sales figures.

NOTE: A direct comparison of 1954 LPG sales with those of 1953 reported by the Bureau of Mines, indicates a substantial decrease for 1954. However, the Bureau of Mines changed the method of reporting LPG statistics starting January 1, 1954. This change in reporting procedure makes such a direct comparison of sales for these two years unrealistic. The two major changes were: (1) LPG blended into gasoline were reported by gasoline plants (shipper) in 1953, but in 1954 they were reported by refineries (receivers). These reports showed more LPG being blended into gasoline, leaving less for "other uses." This, it is necessary to consider this change when making a comparison. (2) The reports for 1954 contain more complete coverage of LPG in underground storage. This is an important change, since that which is not reported as in storage is shown as sales. These are the two major changes in the procedure. However, it is felt that the revision makes the entire report more accurate and realistic, although it does not show a breakdown of demand for the various uses.

LPG . . . sales substantially ahead of previous year.

Prospects even better for 1955.

By GEO. R. BENZ, PAUL W. TUCKER and W. F. DeVOE,
Phillips Petroleum Company, Bartlesville, Okla.

SALES OF LIQUEFIED petroleum gas passed another milestone in 1954 with a healthy increase in volume over 1953. The outlook for 1955 appears even better with general upturn of business conditions.

Sales of LP-Gas in 1954 are estimated at 5,084,901,000 gallons or 3.1 percent over the 1953 volume. Production, storage and transportation facilities continued to increase through 1954.

Domestic and Motor Fuel sales were up 7.5 percent or 223,215,000 gallons.

Industrial and miscellaneous sales increased 2.0 percent.

Gas Manufacturing or utility sales dropped 6.5 percent.

Sales of LPG for chemical manufacturing were up 1.0 percent.

Sales of LPG for manufacture of synthetic rubber components were down nearly 19 percent.

Domestic and motor fuel. Sales of LPG for domestic and motor fuel purposes in 1954 are estimated at 3,200,633,000 gallons. This represents an increase of 7.5 percent over comparable 1953 sales. As usual, the domestic and motor fuel market is the largest segment of total sales. However, the shorter and milder winter which characterized the winters of 51-52 and 52-53 again prevailed and served to sharply limit larger increases in this category.

The summer sales did not hold up as well as they have in previous years because the usually heavy irrigation load (fuel for the pumping units) did not start until late in the summer, and sales of LPG for tractor fuel were off due to the drought which curtailed the use of tractors.

There has been a very substantial increase in the use of LPG for tobacco curing in the Connecticut Valley, the Southeast and in Missouri. Small crop dehydration plants, as well as portable crop dehydration units, continue to be a good market. There is a growing and widespread interest in irrigation. However, house heating doubtless remains as the biggest single potential load-builder. House heating with LPG is moving north. House heating in the cooler regions does call for larger storage, both dealer and customer.

It is estimated that 402,000 ranges were shipped during the year. This is a decrease of approximately 10 percent from 1953.

Sales of automatic LPG water heaters are estimated at 274,500 or about 3.7 percent under those of 1953. The shipments of LPG fired floor, space and wall type furnaces this year were almost 392,000. This was 28.0 percent of the total production of this type of gas-fired appliances. LPG fueled warm air furnaces represented 8 percent of total (or 50,000) this year. Three percent of the conversion burners shipped during the year were for LPG. This trend was characteristic of the entire appliance industry (both gas and electric) for 1954.

Sales of LPG for motor fuel during 1954 showed exceptional gains. It is difficult to separate the quantity of LPG used as motor fuel from the overall domestic use. However, it is conservatively estimated that the sales of LPG motor fuel increased 25 percent over last year. In other words, this use alone amounted to nearly 625 million gallons or over 12 percent of the total sales. There are now over 2500 buses, 200,000 tractors and untold numbers of trucks and taxicabs operating on LPG. To arrive at the total LPG motor fuel market, it is necessary to add that which is used

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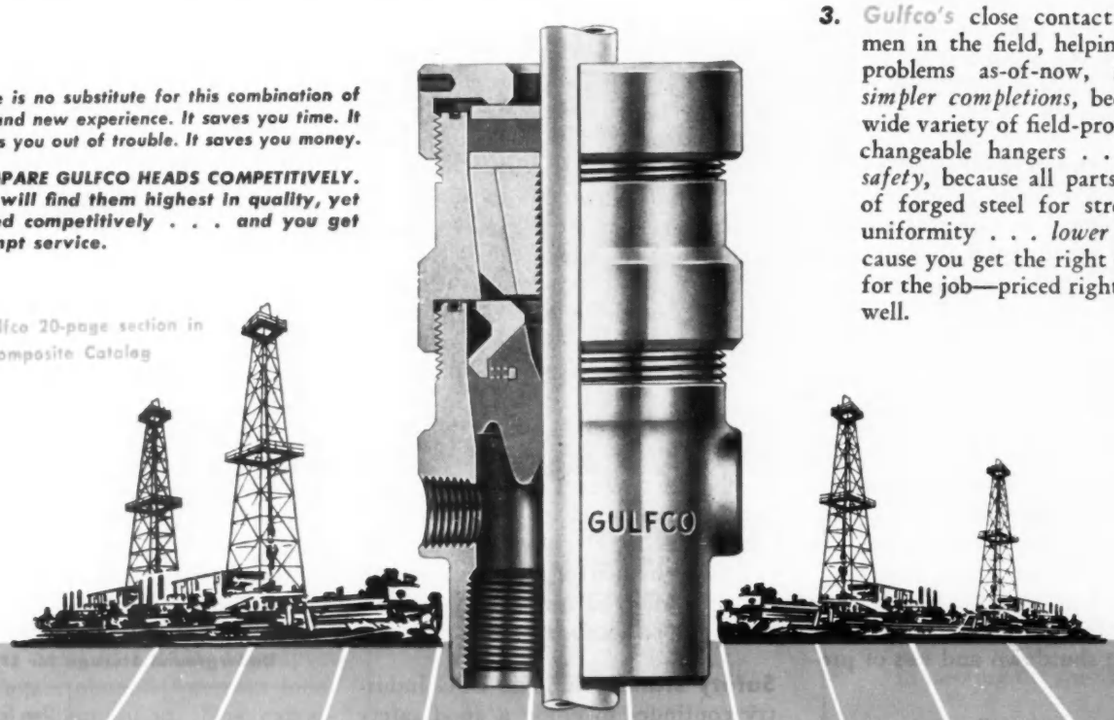

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for irrigation, oil and gas well drilling, industrial tractors, lift trucks and refrigeration unit engines in cargo trucks.

Outstanding during 1954 in the LPG motor fuel phase was the interest in converting industrial tractors and lift trucks and engines driving over the road cargo truck refrigeration units.

Probably the most important factor in the conversion of lift trucks is the elimination of exhaust fumes. With refrigeration units, the major factors are elimination of lead fouling of spark plugs and exhaust valve problems that resulted from using gasoline under constant speed, constant load conditions. The first two LPG fueled lift trucks to be approved by the Underwriters' Laboratories were announced in 1954.

Industrial and miscellaneous uses. The sales in this category totaled 381,718,000 gallons, up 2.0 percent over 1953. It is estimated that because of natural gas pipe line extensions or increased pipe line throughputs, the industrial LPG load itself was down slightly from the previous year. This seems reasonable also when it is considered that one of the major industrial uses is in heat treating which leveled off. However, the increase in miscellaneous applications more than offset the industrial loss so that the net is up. More industrial "stand by" plants are being added as a protection against interrupted gas service with consequent shutdown and loss of production.

Utility use. Gas manufacturing demand or utility use of LPG for 1954 is estimated to be about 208 million gallons or 6.5 percent less than 1953. This is due to the mild winter and the natural gas line extensions or increased throughputs. The latter two reasons are, however, the major ones. In some areas the demand for LPG for peaks having showed sizable increases due to the utilities taking on new house heating loads. The use of LPG "in the mains" at new housing developments continues popular.

Chemical manufacture. Sales of LPG as a raw material for the manufacture of chemicals and chemical intermediates showed only a modest increase of 1.0 percent over 1953, with an estimated volume of 977,101,000 gallons. This increase was brought about by an upturn in demand during the final quarter.

Petrochemicals, as a group, made a much greater gain during the year, but most of the grain was due to increased use of methane and ethane in the production of anhydrous ammonia and polyethylene. Petrochemicals used in the textile industry, many of which are produced from LPG, had a slow year, and the market for synthetic alcohols and various anti-freeze compounds, also large consumers of LPG, was weak. These decreases were slightly more than compensated for by the requirements of new plants and full time operation of plants built in 1953.

Rubber. The demand for LP-Gas as a raw material for the manufacture of synthetic rubber components decreased more than 18 percent. Total volume is estimated at 317,477,000 gallons. This reduction in the use of LPG for rubber during 1954 resulted from the substantial cutback in synthetic rubber production authorized by the Federal Facilities Corporation. Reductions in the synthetic rubber program resulted from a combination of several factors. The high production of automobiles during 1952 and 1953 resulted in a considerably higher number of new cars on the road than has been normal in previous years. These cars, for the most part, are still running on their original rubber and this has affected adversely the demand for replacement tires.

Safety standards. The LPG industry continues to enjoy a good safety record due to continuing attention by all phases of the industry. A new section devoted exclusively to LPG service stations has been added to the NFPA Standard No. 58 for the Storage and Handling of Liquefied Petroleum Gas. Other revisions in the standards have been made to provide adequately for industrial tractors and lift trucks and cargo heating and refrigeration. NFPA Standard No. 59 which covers Liquefied Petroleum Gas at Utility Gas Plants has been revised for the first time since 1949. Several major municipalities have revised their ordinances to permit and properly provide for the storage, transportation and utilization of LP-Gas within their corporate limits.

Supply. The production potential of LPG continues to increase despite curtailment in crude production and crude runs to stills. Twenty new sources of LPG were completed or nearly completed in 1954 with a total production potential exceeding 700 million gallons. This included 19 natural gasoline plants and one major refinery addition. Obviously, this increased capacity was not available for the entire year as some of the larger sources were completed near the end of the year. It is estimated that 15 new plants will be added in 1955 with a product potential of upwards of 200 million gallons.

Storage. Storage facilities are at an all-time high. Storage has been increased at all levels—producing, distributing and consuming. Percentagewise, more tanks are being sold in the 500 and 1000 gallon size. However, with the continued swing to LPG house heating, consumer storage is still too often undersized to meet the requirements.

The LPG industry in 1954 continued the rapid development of underground facilities for LPG. The 458 million gallons of underground storage in use at the end of 1954 exceeded storage in use a year earlier by 212 million gallons, a gain of approximately 86 percent. At the year's end an additional 250 million gallons of storage was under construction or proposed. This is shown in the following table:

Underground Storage for LP-Gas

	Jan. 1, 1954 1,000,000 Gallons	Jan. 1, 1955 1,000,000 Gallons
Storage in Use		
Caverns in Salt Formations	212.1	383.1
Mined Caverns	16.9	27.8
*Storage in Sand Formations	17.0	47.5
Total Storage in Use	246.0	458.4
Storage Under Construction		
Caverns in Salt Formations	93.9	132.9
Mined Caverns	15.8	7.6
Total Storage Under Construction	109.7	140.5
New Storage Proposed		
Caverns in Salt Formations	99.7	92.6
Mined Caverns	20.2	16.8
Total New Storage Proposed	119.9	109.4
Total Storage (In use, under construction and presently proposed)		
Caverns in Salt Formations	405.7	608.6
Mined Storage	52.9	52.2
*Storage in Sand Formations	17.0	47.5
Total	475.6	708.3

* The capacities of storage in sand formations are reported as the maximum volume used thus far as the ultimate capacity is unknown.

Most of the storage developed and proposed is situated in salt formations in gas-producing areas. The industry

has taken advantage of lower construction costs for storage facilities in the vast Permian salt beds, extending from central Kansas through the Oklahoma and Texas Panhandles, across West Texas and southern New Mexico, and in the numerous salt domes along the Gulf Coast in South Louisiana and Texas. Some use has been made of storage space in sand formations underlying many producing facilities. The underground storage in use east of the Mississippi River and generally north of the Mason-Dixon Line totals approximately 34 million gallons. In recent months construction has started and plans are being made for additional underground storage at refineries and terminals along the East Coast and in the eastern part of the U. S.

Transportation. It is now estimated that there are 26,144 pressure tank cars in service suitable for handling LPG. However, about 7500 are in other service, principally chemical. This would leave an estimated 18,644 cars in LPG service. Over 2100 tank cars were added to the LPG fleet during 1954. Another sea-going barge was christened and put into service. This makes a total water fleet of 2 LPG ships, 3 dual cargo ships, 4 propane barges (2 inland waterways, 2 sea-going) and a butane barge. While a substantial amount of the total LPG is currently moved by pipe line, new LPG pipe line projects have been announced for Mexico, the U. S. and Canada.

Exports. Sales of LP-Gas for export are up again about 30 percent totaling 38.5 million gallons. New extraction facilities have been proposed for Canada, Mexico and England but are not yet in operation.

Outlook. The gain in LPG sales for 1954 was a healthy one although not equal to the phenominal gains of earlier years.

The house heating market offers one of the greatest potentials for large volume increases in sales. The motor fuel market is expanding and achieving wider acceptance. It also offers great possibilities for increased volume. The air conditioning field offers a growing market for year-around air conditioning using gaseous fuels. In view of the increasing sharp competition in the fuel market, the industry must step up its sales efforts and render the best possible service to its customers to continue to enjoy substantial gains each year.

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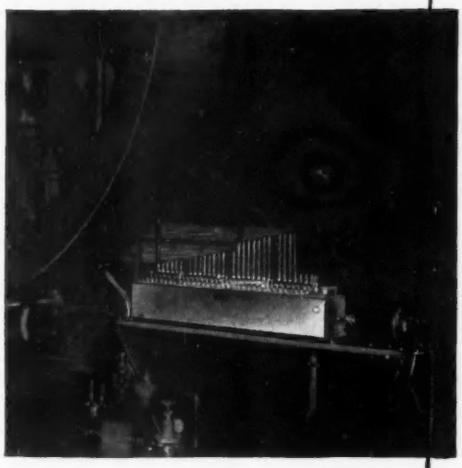

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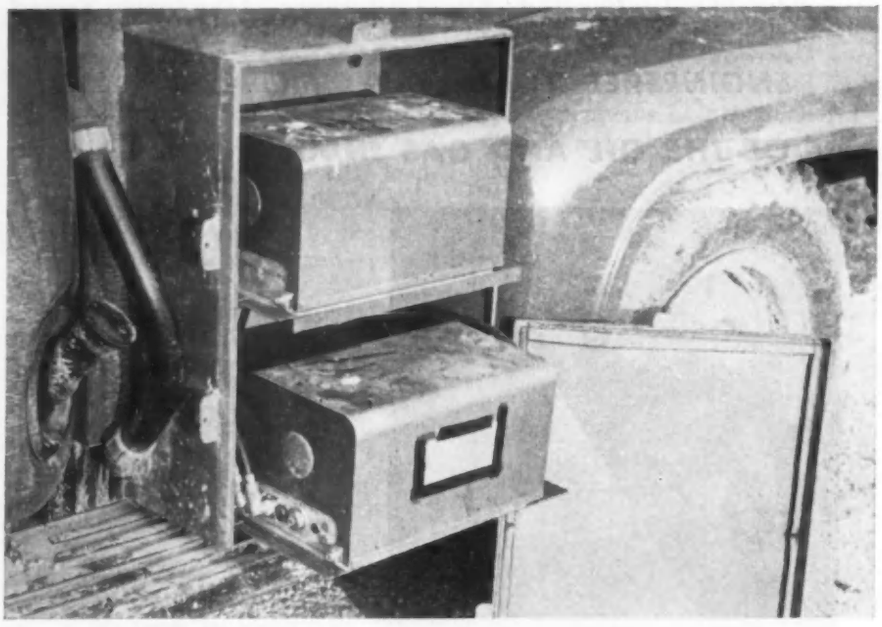


Sliding Shelves Make Radio Accessible

A moisture-proof type 14-gage sheet metal box with sliding shelves, and bolted to the side of the cab, is one solution to the difficult problem of finding space to install two-way radio in a modern truck. One shelf is for the transmitter and the other, for the receiver.

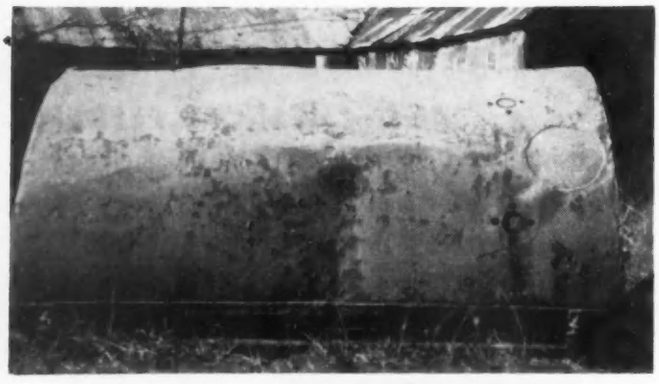
The remote controls, mounted on the dashboard with mike and speaker, are completely out of the way. The cables for the remote system run under the floor mat, out through a hole drilled in the rear side of the cab and through a rubber flexible conduit with regulation conduit connectors on each end. The connectors can be screwed into both the cab of the truck and into the side of the radio cabinet.

The cabinet is mounted on the side of the truck with one-half inch stove bolts through the side boards. A snap-tight cover with rubber gasket material glued to the inside seals the front opening. It is fastened in place by three bolts that pass through threaded tabs welded on top and sides of the cabinet.

This provides a ready access to the set and leaves cab and bed room for driver and work equipment. With the sliding shelf installation, the serviceman can pull out either receiver or transmitter and service it without having to wrestle with moving seats or to scramble under shovels and picks to find the radio when it is mounted in the bed of the truck.

Old Tank Stores Workover Mud

To facilitate the easy handling of mud used in workover operations, and to prevent the necessity of having to dig mud pits, one company scouted their lease and obtained all of the obsolete 2000 gallon oil tanks that were made of heavy gage galvanized sheet metal metal. These were then cut in two half sections and sheet metal crimped and welded into place covering each of the open halves. All openings where valves and fittings were once installed were closed up with welded patches to prevent leakage.



The half-tanks were then mounted on skids fabricated from two-inch tubing salvaged from the lease. The tanks were fastened to this skid by means of a one-inch angle iron which was welded, first to the tank and then to the cross braces of the skid. A two-foot square hole was cut from one end of the top side of the tank and a two-inch collar welded in the center of the tank. Through the large opening, sacks of mud could be dumped directly into the tank falling directly into the path of the mud return line which was also passed through this large opening. The suction line from the tank to the workover rig was run through the large collar welded in the center of the tank, thus doing away with the costly expense of renting mud tanks for small jobs, or digging up the lease to make way for unsightly mud pits.

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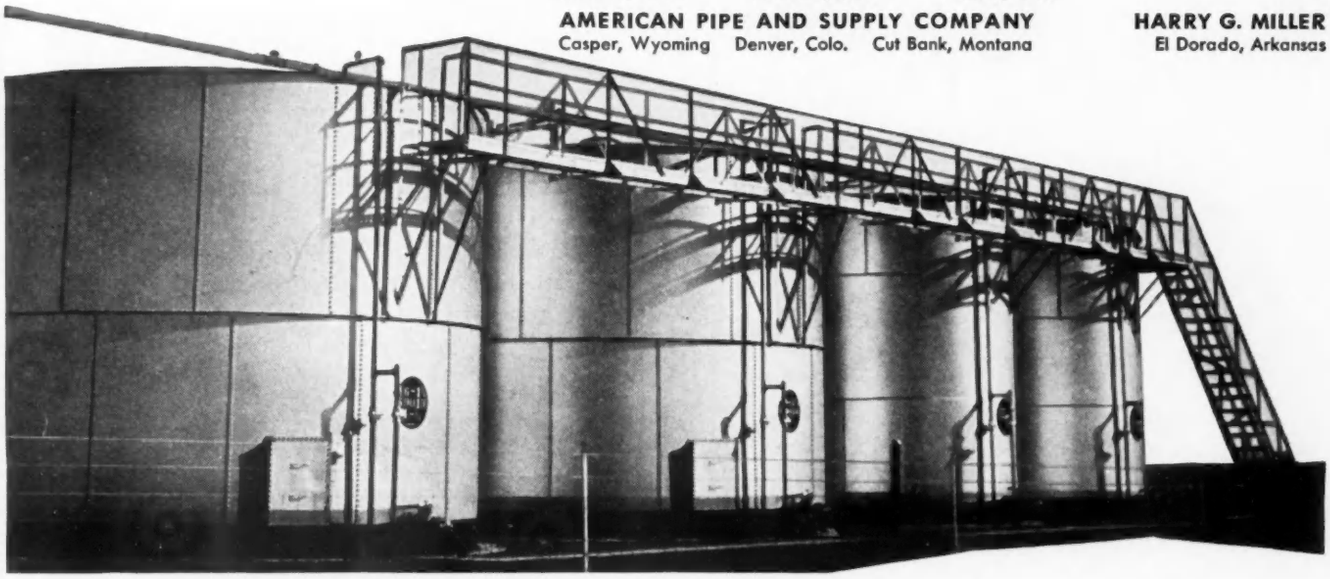

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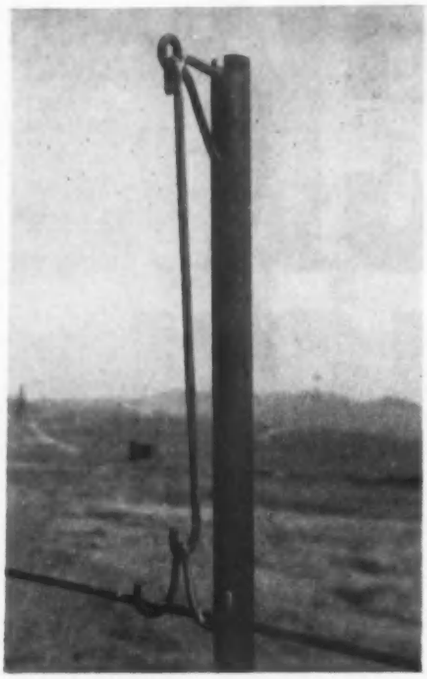


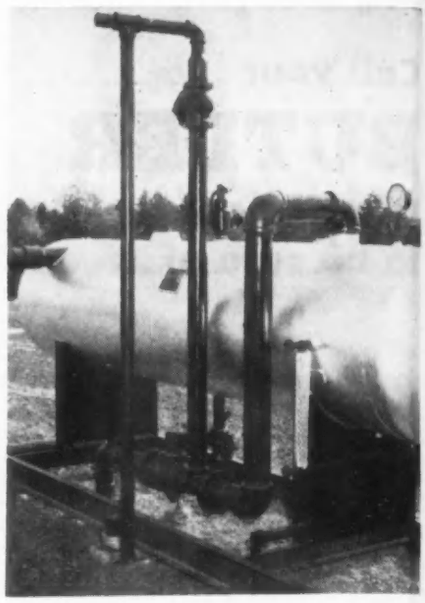
Double Hook Device Supports Pull Rods

In stripper well areas, one of the maintenance problems continually faced by the pumper is the necessity of replacing pull lines which fall off of their hangers or wear out due to the movement of the pull line. One company has had success with a hanger of the type shown in the photograph.

Made of sucker rod materials, the device which supports the pull line is a double curved hook. Each of the hooks faces in the opposite direction and when once installed on the line, there is little likelihood of the line jumping out.

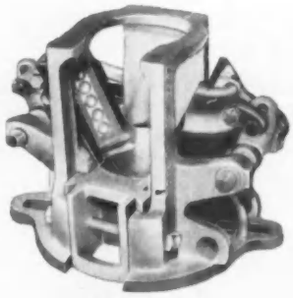
Frequently a rod line support will consist only of a single J-type hook, and when the pull rod finally wears through the hook will break and rod will fall to the ground. Often perhaps as a result of a well plunger sticking, the line may jump out of the J-hook and fall to the ground.

The present hook provides a greater bearing surface and will not wear out as soon as would a single hook. Easily installed, these double hooks can be made in the shop by a welder and, if sufficient number are to be constructed at one time, a simple jig can be fashioned to simplify the heating and bending.



Connection on Vent Line Provides Fuel Gas

Where it is necessary to take wet gas off the vent line to be used for lease purposes, a simple connection may be made on the upstream side of the back pressure valve on the outlet of the separator. This keeps all



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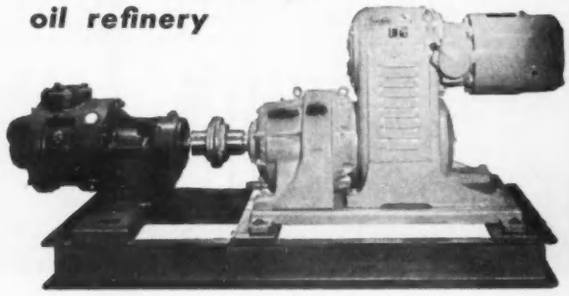

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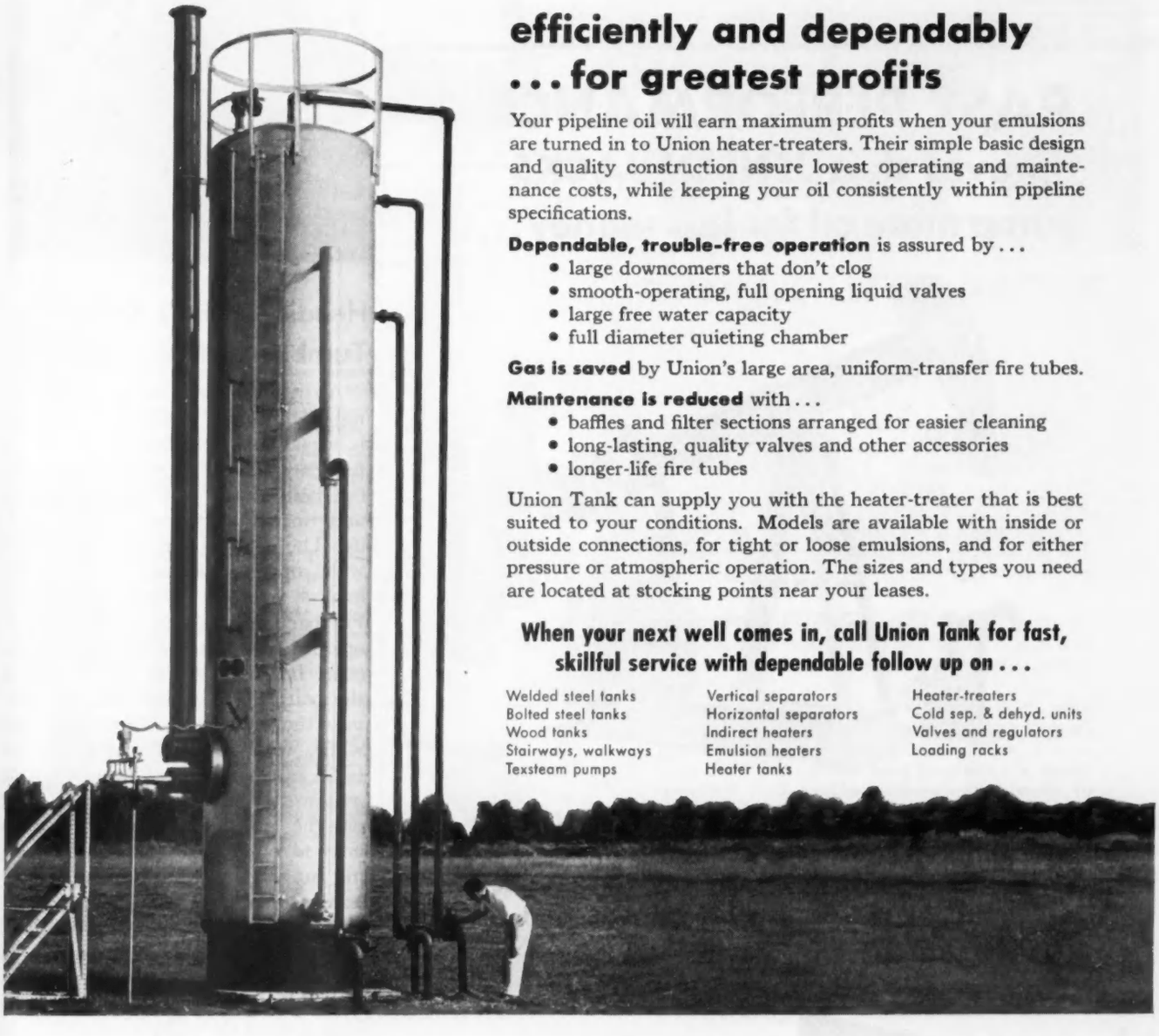

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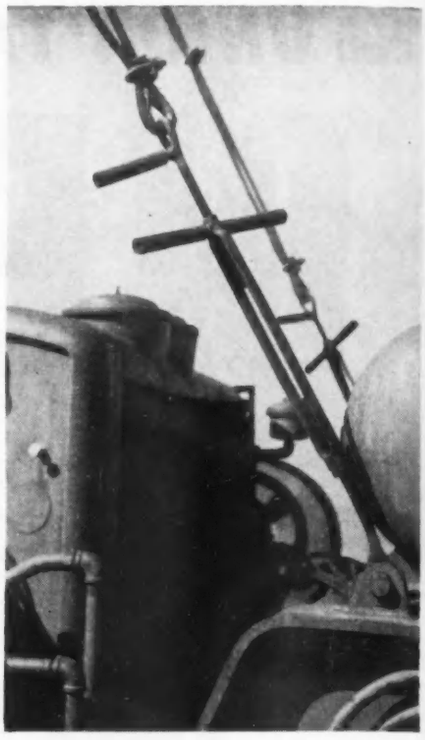
the connections together to that anyone can tell at a moment's glance where the fuel gas takes off.

The connection is made by inserting a tee, looking up between the flange on the vent line and the backpressure valve. A long riser is screwed into this tee so that the gas will be scrubbed as it leaves the vent line. Steel wool shavings may be packed in this riser to act as a filter element if desired. A valve and swadged nipple are inserted on top of the riser, reducing the size of the pipe to two inches O.D. The pipe is then returned to the ground and a pressure reducing regulator is installed for reducing the pressure for lease use.

By making a simple hookup near the separator, many connections can be saved and the pumper has everything under control if there is a failure in the gas supply to the lease.



Handle on Bolt Speeds Turnbuckle Make-Up

An aggravating and time-consuming occurrence, whenever a guy line is rigged up or taken down, is the tendency for the line, attached to the eye bolt of the turnbuckle, to twist and turn as the turnbuckle is made up. The job was simplified somewhat when operators started welding heels or stub handles to their turnbuckles. Further improvement made by one operator consisted of adding still another handle, this one to the side of the bolt. This additional handle permits the man to steady the bolt end while, with the other hand he can make up the turnbuckle until partial tension is obtained. From this point on, the guy line will have less tendency to twist and he can finish making up the turnbuckle using both hands to turn the center section.

To further ease the work involved, the handles can be equipped with rubber sleeves, the latter cut to length from salvaged air hose usually available around the pulling unit.

We're Hinting for Hints!

How about passing those practical little ideas or short-cuts along to us so we can tell others about them? If they helped you they can help others. Send us an item accompanied by a photograph. If acceptable, it will be worth $10 to you.

PAST PERFORMANCE
proves that JENSEN JACKS pump more oil for less money . . .

. . . and producers who standardize on JENSEN JACKS now can look forward to a better performance of economy and efficiency. Take this opportunity to investigate JENSEN JACKS. See your dealer or write us at Coffeyville.

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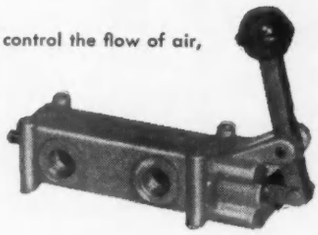
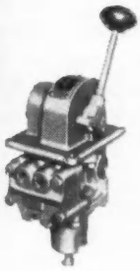
Westinghouse Pneumatic Devices

designed to last... with minimum maintenance



NEW TYPE "D" PILOTAIR VALVES control the flow of air, oil, or water at pressures up to 250 psig. They are two-way, three-way and four-way valves operated by levers, treadles, pedals, buttons, cams, solenoids, or pneumatically. Their new seal and construction assure long life and low maintenance.



CONTROLAIR® VALVES give you precise control of air pressure in extremely small increments. They are foot, hand, or cam operated. The foot and hand operated valves can be panel mounted.

PNEUMATIC CYLINDERS used with Westinghouse Valves provide dependable linear power. Single or double-acting in diameters from 1½" to 10". Stroke length up to 42". With or without adjustable cushioning. Foot, flange, or pivot mounting.

PLUG-IN COUPLERS. These are full-flow, heavy-duty, quick couplers available in two series: Interchange (for use with other makes) and Standard. Both are made in the Push Type, one hand connect-disconnect, and the Sleeve Type.

SAVAIR® COCKS for on-off control of air, water, oil, or gas. Two, three, or four-way operation. Pipe sizes ¼" to 2". Self compensating for wear. The best cock on the market.

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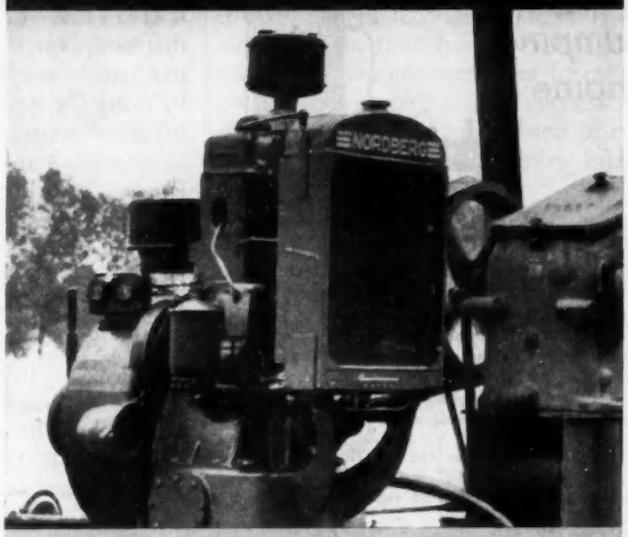

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GAS ENGINES

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THE TORCOME DFL GAS SEPARATOR and FLOW NIPPLE is a field-tested production unit, designed to aid the operator of pumping wells. It is installed in the flow line near the well head to provide clean, dry gas for the engine from the oil being produced. Where applicable, it eliminates fuel purchases, gas lines, drips and scrubbers.

Completely automatic, with no moving parts, this small (14" x 48"), compact, economical, easily installed separator will soon pay for itself.

Applicable to wells pumping 25 BOPD.

Inquiries invited.

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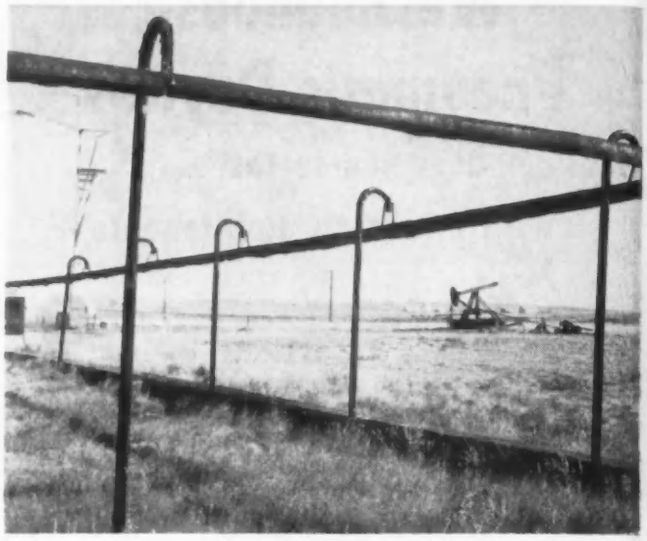
Hangers Simplify Thermosiphon System



Much of the work involved in setting posts or hangers for the elevated hot water line of a thermosiphon system can be avoided by using the type of supports devised by one operator in the Rocky Mountain area. By means of wrinkle bending, the upper ends of the two-inch pipe posts were bent smoothly through 180 degrees, and a hole drilled through the pipe at the lowermost point on the outboard end of the bend. Loops in which to support the pipe, and made of perforated tank channel material, then are provided and attached temporarily to the hanger, bolts of sufficient length to run through the pipe and the two ends of the channel being provided also.

When the flow line is to be installed, the slope can be determined roughly and the pipe slung in the channel material loops. Later, when the line is in place, more precise adjustments can be made by taking up or letting out a hole or two, as the need arises, merely by rebending the loops and bolting them in place.

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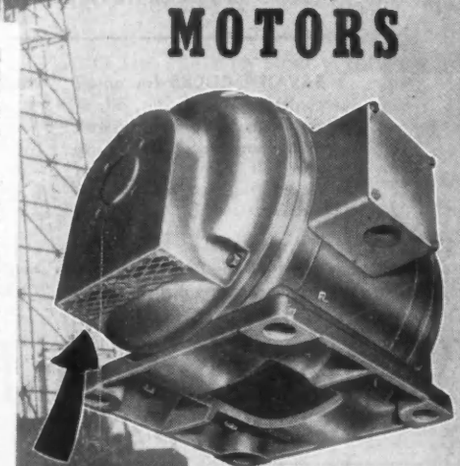
The FIELDMASTER has many other **outstanding advantages** that our distributor, the BETHLEHEM SUPPLY COMPANY, will be happy to show you. May we have them contact you . . . **without obligation?**



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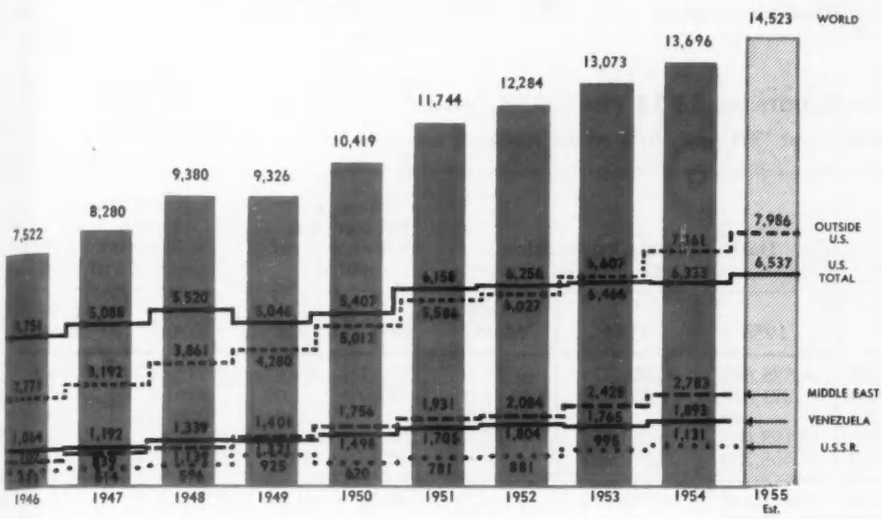
VALLEY ELECTRIC CORP. **4221 FOREST PARK BLVD., ST. LOUIS, MO.**



World Crude Production . . .

to increase 6 percent over record output for 1954.

WORLD PRODUCTION of crude oil will set a new record in 1955, averaging 14,523,000 barrels daily, WORLD OIL forecasts. That would be an increase of 827,000 barrels daily or 6.0 percent over the 1954 record output of 13,696,000 barrels per day.

This forecast allows for U. S. crude production in 1955 averaging 6,537,000 barrels daily, as forecast by the Bureau of Mines, and representing an increase of 202,000 barrels or 3.2 percent. For countries outside the U. S., the forecast calls for crude production in 1955 averaging 7,986,000 barrels daily, an increase of 625,000 barrels daily or 8.5 percent.

The 1954 world production of 13,696,000 barrels daily represented an increase of 623,000 barrels or 4.8 percent over 1953. U. S. output of 6,335,000 barrels daily was down 131,000 barrels or 2.0 percent, but production outside the U. S. of 7,361,000 daily was up 754,000 barrels or 11.4 percent.

The predicted increase of 6.0 percent in world production of crude in 1955 would compare with increases of 4.8 percent in 1954, 5.8 percent in 1953, 5.2 percent in 1952, 12.7 percent in 1951, and 11.7 percent in 1950. These gains in world output have been held down by smaller increases in the U. S., which until recently accounted for more than 50 percent of world production.

The anticipated 3.2 percent rise in U. S. output in 1955 would compare with a decrease of 2.0 percent in 1954 and increases of 3.1 percent in 1953, 1.9 percent in 1952, 13.9 percent in 1951, and 7.2 percent in 1950. The estimated increase of 8.5 percent in crude production in 1955 outside the U. S. would compare with gains of 11.4 percent in 1954, 8.7 percent in 1953, 8.8 percent in 1952, 11.5 percent in 1951, and 17.1 percent in 1950.

The estimated production of the U. S. in 1955 is equivalent to only 45.0 percent of the expected world production, compared with past records of 46.3 percent in 1954, 49.5 percent in 1953, 50.8 percent in 1952, 52.4 percent in 1951, 51.9 percent in 1950, 54.1 percent in 1949, 58.8 percent in 1948, 61.4 percent in 1947, 63.2 percent in 1946, and 66.0 percent in 1945, the final year of World War II.

Conversely, the expected production outside the U. S. in 1955 is equivalent to 55.0 percent of the world total, compared with 53.7 percent in 1954, 50.5 percent in 1953, 49.2 percent in 1952, 47.6 percent in 1951, 48.1 percent in 1950, 45.9 percent in 1949, 41.2 percent in 1948, 38.6 percent in 1947, 36.8 percent in 1946, and 34.0 percent in 1945. In every year since the war except 1951 the U. S. share in world production has declined and the proportion accounted for by other countries has increased, with benefit of the vigorous postwar expansion of reserves, production, and refining facilities.

Steady Rise. There have been increases in world crude production in every postwar year except 1949, when a slight decrease was caused by a cutback in the U. S. In barrels per day, these gains were as follows: 413,000 in 1946, 758,000 in 1947, 1,100,000 in 1948 (decrease of 54,000 in 1949), 1,093,000 in 1950, 1,326,000 in 1951, 608,000 in 1952, 720,000 in 1953, 623,000 in 1954, and an estimated 827,000 in 1955.

In the decade since the end of the war, world production has approximately doubled. It averaged only 7,109,000 barrels daily in 1945, and

Crude Oil Production of World, U. S., and Countries Outside U. S., by Years
(Source: U. S. Bureau of Mines except part of 1953 and forecast for 1954 outside U. S. estimated by WORLD OIL.)
(THOUSANDS OF BARRELS)

	WORLD		U.S.		OUTSIDE U.S.	
Year	Total	Daily	Total	Daily	Total	Daily
1918	503,515	1,378	355,928	975	147,587	403
1919	555,875	1,523	378,367	1,037	177,508	486
1920	688,884	1,887	442,929	1,213	245,955	674
1921	766,002	2,098	472,183	1,294	293,819	804
1922	858,898	2,353	557,531	1,528	301,367	825
1923	1,015,736	2,783	732,407	2,007	283,329	776
1924	1,014,318	2,779	713,940	1,956	300,378	823
1925	1,068,933	2,928	763,743	2,092	305,190	836
1926	1,096,823	3,005	770,874	2,112	325,949	893
1927	1,262,582	3,459	901,129	2,469	361,453	990
1928	1,324,774	3,629	901,474	2,469	423,300	1,160
1929	1,485,867	4,071	1,007,323	2,760	478,544	1,311
1930	1,410,037	3,863	898,011	2,460	512,626	1,403
1931	1,372,532	3,760	851,081	2,332	521,451	1,428
1932	1,309,677	3,588	785,159	2,151	524,518	1,437
1933	1,422,146	3,951	905,656	2,481	536,490	1,470
1934	1,522,281	4,170	908,065	2,488	614,216	1,682
1935	1,654,488	4,532	996,596	2,730	657,892	1,802
1936	1,791,540	4,908	1,099,687	3,013	691,853	1,895
1937	2,039,231	5,587	1,279,160	3,505	760,071	2,082
1938	1,988,041	5,446	1,214,355	3,327	773,686	2,119
1939	2,086,160	5,716	1,264,962	3,466	821,198	2,250
1940	2,149,821	5,874	1,353,214	3,697	796,607	2,177
1941	2,220,657	6,084	1,402,228	3,842	818,429	2,242
1942	2,093,100	5,735	1,386,645	3,799	706,455	1,935
1943	2,256,637	6,183	1,505,613	4,125	751,034	2,058
1944	2,592,289	7,083	1,677,904	4,584	914,385	2,498
1945	2,594,697	7,109	1,173,665	4,695	881,042	2,414
1946	2,745,430	7,522	1,733,939	4,751	1,011,491	2,771
1947	3,022,139	8,280	1,856,987	5,088	1,165,152	3,192
1948	3,433,234	9,380	2,020,185	5,520	1,413,049	3,861
1949	3,404,142	9,326	1,841,940	5,046	1,562,202	4,280
1950	3,802,995	10,419	1,973,574	5,407	1,829,421	5,012
1951	4,286,826	11,745	2,247,711	6,158	2,039,115	5,587
1952	4,508,956	12,353	2,289,836	6,274	2,219,120	6,079
1953	4,771,662	13,073	2,359,998	6,466	2,411,664	6,607
1954	4,999,110	13,696	2,312,212	6,335	2,686,898	7,361
1955 Est.	5,301,000	14,523	2,386,000	6,537	2,915,000	7,986

is forecast at 14,523,000 daily for 1955. This sharp increase was brought about largely by gains outside the U. S. The U. S. averaged 4,695,000 barrels daily in 1945 and will be up 39.2 percent if it produces the estimated 6,537,000 daily in 1955. Other countries produced only 2,414,000 barrels daily in 1945 and yielded three times that much in 1954 and will produce over three times as much if the 1955 forecast of 7,986,000 daily is fulfilled.

World Crude Oil Production, by Countries, 1953 and 1954, and Cumulative Through 1954

(Sources: U. S. Bureau of Mines except 1954 partly from private sources or estimated by WORLD OIL)

Continent and Country	Annual Production (Thousands of Barrels)		Daily Average Production (Actual Barrels)			Year's Production As Percent of World		Cumulative Production To January 1, 1955 (Thousands of Barrels)	
	1953	1954	1953	1954	% Diff. '53-'54	1953	1954	Total	As % of World
North America	**2,513,357**	**2,490,148**	**6,885,894**	**6,822,323**	**— 0.9**	**52.67**	**49.81**	**53,399,857**	**63.48**
Canada	80,902	95,464	221,649	261,545	+ 18.0	1.69	1.90	476,697	0.56
Cuba	17	36	46	99	+115.2	.....	0.01	2,498	0.01
Mexico	72,440	82,436	198,465	225,852	+ 13.8	1.52	1.64	2,791,817	3.32
United States	2,359,998	2,312,212	6,465,734	6,334,827	— 2.0	49.46	46.26	50,128,845	59.59
South America	**756,332**	**808,023**	**2,072,138**	**2,213,762**	**+ 6.8**	**15.85**	**16.16**	**10,442,288**	**12.41**
Argentina	28,501	28,905	78,085	79,192	+ 1.4	0.59	0.58	564,866	0.67
Barbadoes	.....	.....	.....	.....	.....	.....	.....	8	.....
Bolivia	601	1,503	1,646	4,118	+150.2	0.02	0.03	8,740	0.01
Brazil	915	761	2,507	2,085	— 16.8	0.02	0.01	4,107	0.00
Chile	1,264	1,642	3,463	4,499	+ 29.9	0.02	0.03	5,200	0.01
Colombia	39,434	40,636	108,038	111,331	+ 3.0	0.83	0.82	662,175	0.79
Ecuador	2,967	3,081	8,129	8,441	+ 3.8	0.06	0.06	60,625	0.07
Peru	16,061	17,021	44,003	46,633	+ 6.0	0.34	0.34	467,090	0.55
Trinidad	22,346	23,368	61,222	64,022	+ 4.6	0.47	0.47	500,912	0.60
Venezuela	644,243	691,106	1,765,045	1,893,441	+ 7.3	13.50	13.82	8,168,565	9.71
Europe	**470,023**	**531,506**	**1,287,731**	**1,456,181**	**+ 13.1**	**9.85**	**10.63**	**10,163,192**	**12.08**
Albania	1,400	1,825	3,836	5,000	+ 30.3	0.03	0.04	23,687	0.03
Austria	21,100	29,200	57,808	80,000	+ 38.4	0.44	0.58	154,298	0.18
Czechoslovakia	900	1,095	2,466	3,000	+ 21.7	0.02	0.02	8,104	0.01
France	2,561	3,688	7,016	10,104	+ 44.0	0.05	0.08	25,974	0.03
Germany	15,504	18,371	42,477	50,331	+ 18.5	0.33	0.36	162,845	0.19
Great Britain	410	442	1,123	1,211	+ 7.8	0.01	0.01	6,404	0.01
Hungary	3,800	6,570	10,411	18,000	+ 72.3	0.08	0.13	67,134	0.08
Italy	656	546	1,797	1,499	— 16.6	0.01	0.02	5,378	0.01
Netherlands	5,688	6,466	15,584	17,714	+ 13.7	0.12	0.12	36,692	0.04
Poland	1,800	2,008	4,931	5,500	+ 11.5	0.04	0.04	286,828	0.34
Roumania	52,000	47,450	142,465	130,000	— 8.8	1.09	0.95	1,433,036	1.71
U. S. S. R. (Russia)	363,000	412,750	994,518	1,130,822	+ 13.7	7.60	8.26	7,945,898	9.44
Yugoslavia	1,204	1,095	3,299	3,000	— 9.1	0.03	0.02	6,914	0.01
Africa	**17,903**	**15,287**	**49,049**	**41,882**	**— 14.6**	**0.37**	**0.31**	**221,629**	**0.26**
Algeria	641	587	1,756	1,608	— 8.4	0.01	0.01	1,803	0.00
Egypt	16,501	13,806	45,208	37,825	— 16.3	0.35	0.28	215,957	0.26
Morocco	761	894	2,085	2,449	+ 17.5	0.01	0.02	3,869	0.00
Asia, Total	**1,014,039**	**1,154,138**	**2,778,183**	**3,162,022**	**+ 13.8**	**21.26**	**23.09**	**9,902,435**	**11.77**
Asia, Middle East	**885,136**	**1,015,929**	**2,425,025**	**2,783,367**	**+ 14.8**	**18.56**	**20.32**	**7,383,601**	**8.78**
Bahrain	10,978	10,994	30,077	30,121	+ 0.1	0.23	0.22	164,886	0.20
Iran	9,800	14,016	26,849	38,400	+ 43.0	0.21	0.28	2,547,369	3.03
Iraq	210,268	252,722	576,075	692,389	+ 20.2	4.41	5.05	1,161,131	1.38
Kuwait	314,592	347,955	861,895	953,301	+ 10.6	6.59	6.96	1,425,268	1.69
Neutral Zone	.....	6,434	.....	17,627	.....	.....	0.13	6,434	0.01
Qatar	31,025	35,654	85,000	97,682	+ 14.9	0.65	0.72	122,961	0.14
Saudi Arabia	308,294	347,845	844,639	953,000	+ 12.8	6.46	6.95	1,954,569	2.33
Turkey	179	309	490	847	+ 72.9	0.01	0.01	983	0.00
Asia, Far East	**128,903**	**138,209**	**353,158**	**378,655**	**+ 7.2**	**2.70**	**2.77**	**2,518,834**	**2.99**
Burma	1,061	1,278	2,908	3,501	+ 20.4	0.03	0.03	} 362,620	0.43
India	2,215	2,555	6,068	7,000	+ 15.4	0.04	0.05		
Pakistan	1,762	1,935	4,827	5,301	+ 9.8	0.04	0.04		
China	1,000	5,475	2,740	15,000	+447.4	0.02	0.11	13,202	0.02
Indonesia	75,148	77,318	205,884	211,830	+ 2.9	1.57	1.54	1,536,450	1.82
Japan	2,101	2,126	5,756	5,825	+ 1.2	0.05	0.04	107,109	0.13
New Guinea	1,751	4,064	4,797	11,134	+132.1	0.04	0.09	12,895	0.01
Sakhalin	7,000	7,000	19,178	19,178	.....	0.14	0.14	122,240	0.15
Sarawak-Brunei	36,848	36,427	100,953	99,800	— 1.1	0.77	0.72	363,923	0.43
Taiwan (Formosa)	17	31	47	85	+ 80.9	.....	0.01	395	0.00
Australia—New Zealand	**8**	**8**	**22**	**22**	.....	.....	.....	**91**	**0.00**
World, Undistributed	.....	.....	.....	.....	.....	.....	.....	**1,044**	**0.00**
TOTAL WORLD	**4,771,662**	**4,999,110**	**13,073,017**	**13,696,192**	**+ 4.8**	**100.00**	**100.00**	**84,130,536**	**100.00**

World Crude Oil Production, By Countries, By Years (Part 1)

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: U. S. Bureau of Mines annual reports, *Mineral Resources and Minerals Yearbook*, and monthly reports, International Petroleum Trade and World Petroleum Statistics, except as otherwise indicated.)

World and North America, 1857-1895

YEAR	World Total	Percent Produced by U. S.	Canada	United States	Total North America	YEAR	World Total	Percent Produced by U. S.	Canada	United States	Total North America
1857	2	....	....	....	....	1876	11,051	83	312	9,133	9,445
1858	4	....	....	....	....	1877	15,754	85	312	13,350	13,662
1859	6	31	....	2	2	1878	18,417	84	312	15,397	15,709
1860	509	98	....	500	500	1879	23,601	84	575	19,914	20,489
1861	2,131	99	....	2,114	2,114	1880	30,018	88	350	26,286	26,636
1862	3,092	99	12	3,057	3,069	1881	31,993	86	275	27,661	27,936
1863	2,763	94	83	2,611	2,694	1882	35,704	85	275	30,350	30,625
1864	2,304	92	90	2,116	2,206	1883	30,255	78	250	23,450	23,700
1865	2,716	92	110	2,498	2,608	1884	35,969	67	250	24,218	24,468
1866	3,899	92	175	3,598	3,773	1885	26,765	59	250	21,859	22,109
1867	3,709	90	190	3,347	3,537	1886	47,243	59	584	28,065	28,649
1868	3,990	91	200	3,646	3,846	1887	47,807	59	526	28,283	28,809
1869	4,696	90	220	4,215	4,435	1888	52,165	53	695	27,612	28,307
1870	5,799	91	250	5,261	5,511	1889	61,507	57	705	35,164	35,869
1871	5,730	91	270	5,205	5,475	1890	76,633	60	795	45,824	46,619
1872	6,877	92	308	6,293	6,601	1891	91,100	60	755	54,293	55,048
1873	10,838	91	365	9,894	10,259	1892	88,739	57	780	50,515	51,295
1874	11,933	92	169	10,927	11,096	1893	92,038	53	798	48,431	49,229
1875	9,977	88	220	8,788	9,008	1894	89,337	55	829	49,344	50,173
						1895	103,692	51	726	52,892	53,618

World and North America, 1896 to Now

South America, Since Beginning in 1896

YEAR	WORLD TOTAL	Percent Produced by U.S.	NORTH AMERICA					Argentina	Barbados	Bolivia	Brazil	Chile	Colombia	Ecuador	Peru	Trinidad	Venezuela	Total South America
			Canada	Mexico	United States	Cuba	Total North America											
1896	114,199	53	727	.....	60,960	.....	61,687	.....	.....	.....	.....	.....	.....	.....	47	.....	.....	47
1897	121,992	50	710	.....	60,476	.....	61,186	.....	.....	.....	.....	.....	.....	.....	71	.....	.....	71
1898	124,979	44	758	.....	55,364	.....	56,122	.....	.....	.....	.....	.....	.....	.....	71	.....	.....	71
1899	131,147	44	808	.....	57,071	.....	57,879	.....	.....	.....	.....	.....	.....	.....	89	.....	.....	89
1900	149,137	43	913	.....	63,621	.....	64,534	.....	.....	.....	.....	.....	.....	.....	274	.....	.....	274
1901	167,440	41	757	10	69,389	.....	70,156	.....	.....	.....	.....	.....	.....	.....	275	.....	.....	275
1902	181,809	49	531	40	88,767	.....	89,338	.....	.....	.....	.....	.....	.....	.....	287	.....	.....	287
1903	194,879	52	487	75	100,461	.....	101,023	.....	.....	.....	.....	.....	.....	.....	278	.....	.....	278
1904	217,948	54	553	126	117,081	.....	117,760	.....	.....	.....	.....	.....	.....	.....	290	.....	.....	290
1905	215,091	63	634	251	134,717	.....	135,602	.....	.....	.....	.....	.....	.....	.....	373	.....	.....	373
1906	213,263	59	569	502	126,494	.....	127,565	.....	.....	.....	.....	.....	.....	.....	531	.....	.....	531
1907	263,957	63	789	1,005	166,095	.....	167,889	B	.....	.....	.....	.....	.....	.....	751	.....	.....	751
1908	285,287	63	528	3,933	178,527	.....	182,988	12	.....	.....	.....	.....	.....	.....	945	B	.....	957
1909	298,709	61	421	2,714	183,171	.....	186,306	18	.....	.....	.....	.....	.....	.....	1,411	57	.....	1,486
1910	327,763	64	316	3,634	209,557	.....	213,507	20	.....	.....	.....	.....	.....	.....	1,258	143	.....	1,421
1911	344,361	64	291	12,553	220,449	.....	233,293	13	.....	.....	.....	.....	.....	.....	1,465	285	.....	1,763
1912	352,443	63	243	16,558	222,935	.....	239,736	47	.....	.....	.....	.....	.....	.....	1,752	437	.....	2,236
1913	385,345	64	228	25,696	248,446	.....	274,370	131	.....	.....	.....	.....	.....	.....	2,071	504	.....	2,706
1914	407,544	65	215	26,235	265,763	.....	292,213	276	.....	.....	.....	.....	.....	.....	1,837	644	.....	2,757
1915	432,033	65	215	32,911	281,104	.....	314,230	513	.....	.....	.....	.....	.....	.....	2,579	750	.....	3,842
1916	457,500	66	198	40,546	300,767	.....	341,511	867	.....	.....	.....	.....	.....	.....	2,593	929	.....	4,389
1917	502,891	67	214	55,293	335,316	.....	390,823	1,218	.....	.....	.....	.....	.....	57	2,577	1,602	120	5,574
1918	503,515	71	305	63,828	355,928	.....	420,061	1,353	.....	.....	.....	.....	.....	C60	2,527	2,082	333	6,355
1919	555,875	68	241	87,073	378,367	.....	465,681	1,331	.....	.....	.....	.....	.....	C60	2,628	1,841	425	6,285
1920	688,884	64	196	157,069	442,929	.....	600,194	1,651	.....	.....	.....	.....	.....	C60	2,817	2,083	457	7,068
1921	766,002	62	188	193,398	472,183	.....	665,769	2,036	.....	.....	.....	.....	67	C60	3,699	2,354	1,433	9,649
1922	858,898	65	179	182,278	557,531	.....	739,988	2,866	.....	.....	.....	.....	323	C60	5,314	2,445	2,201	13,209
1923	1,015,736	72	170	149,585	732,407	.....	882,162	3,400	.....	.....	.....	.....	425	87	5,699	3,051	4,201	16,863
1924	1,014,318	70	161	139,678	713,940	.....	853,779	4,639	.....	.....	.....	.....	445	C100	8,379	4,057	9,042	26,662
1925	1,068,933	71	332	115,515	763,743	.....	879,590	6,336	.....	.....	.....	.....	1,007	160	9,232	4,387	19,687	40,809
1926	1,096,823	70	364	90,421	770,874	.....	861,659	7,851	.....	.....	.....	.....	6,444	214	10,762	4,971	36,911	67,153
1927	1,262,582	71	477	64,121	901,129	.....	965,727	8,630	.....	.....	.....	.....	15,014	537	10,127	5,380	63,134	102,822
1928	1,324,774	68	624	50,151	901,474	.....	952,249	9,070	.....	.....	.....	.....	19,897	1,084	12,006	7,684	105,749	155,490
1929	1,485,867	68	1,117	44,688	1,007,323	.....	1,053,128	9,391	.....	B	.....	.....	20,385	1,381	13,422	8,716	137,472	190,767
1930	1,410,037	64	1,522	39,530	898,011	.....	939,063	9,002	.....	56	.....	.....	20,346	1,553	12,449	9,419	136,669	189,494
1931	1,372,532	62	1,543	33,039	851,081	.....	885,663	11,709	.....	25	.....	.....	18,237	1,762	10,089	9,744	116,613	168,179
1932	1,309,677	60	1,044	32,805	785,159	.....	819,008	13,139	.....	44	.....	.....	16,414	1,597	9,899	10,126	116,541	167,760
1933	1,442,146	63	1,145	34,001	905,656	23	940,825	13,691	.....	112	.....	.....	13,158	1,620	13,257	9,561	117,720	169,119
1934	1,522,288	60	1,417	38,172	908,065	28	947,682	14,024	.....	159	.....	.....	17,341	1,637	16,314	10,894	136,103	196,472
1935	1,654,495	60	1,447	40,241	996,596	47	1,038,331	14,297	.....	164	.....	.....	17,598	1,732	17,067	11,671	148,254	210,783
1936	1,791,546	61	1,500	41,028	1,099,687	62	1,142,277	15,458	.....	105	.....	.....	18,756	1,942	17,593	13,237	154,794	221,885
1937	2,039,231	63	2,944	46,907	1,279,160	33	1,329,044	16,355	.....	122	.....	.....	20,599	2,161	17,457	15,503	186,230	258,427
1938	1,988,041	61	6,966	38,506	1,214,355	78	1,259,905	17,076	.....	226	.....	.....	21,582	2,246	15,839	17,737	188,174	262,880
1939	2,086,160	60.6	7,838	42,898	1,264,962	112	1,315,810	18,613	.....	215	.....	.....	23,857	2,313	13,508	19,270	206,470	284,246
1940	2,149,821	62.9	8,591	44,036	1,353,214	142	1,405,983	20,609	.....	288	2	.....	25,593	2,349	12,126	22,227	185,570	268,764
1941	2,220,657	63.1	10,134	42,196	1,402,228	150	1,454,708	21,873	.....	235	3	.....	24,553	1,557	11,935	20,506	228,430	309,092
1942	2,093,100	66.2	10,365	34,815	1,386,645	151	1,431,976	23,704	2	308	33	.....	10,487	2,278	13,629	22,069	147,675	220,185
1943	2,256,637	66.7	10,052	35,163	1,505,613	107	1,550,935	27,714	2	334	48	.....	13,261	2,315	14,654	21,385	177,631	257,344
1944	2,592,289	64.7	10,099	38,203	1,677,904	109	1,726,315	24,230	1	314	58	.....	22,291	2,967	14,389	22,139	257,046	343,435
1945	2,594,697	66.0	8,483	43,547	1,713,655	149	1,765,834	22,881	2	382	79	.....	22,449	2,664	13,744	21,093	323,156	406,450
1946	2,745,430	63.2	7,586	49,235	1,733,939	269	1,791,029	20,604	1	363	67	.....	22,118	2,323	12,468	20,233	388,486	466,663
1947	3,022,139	61.4	7,692	56,284	1,856,987	300	1,921,263	21,846	B	377	97	.....	24,794	2,282	12,764	20,521	434,905	517,586
1948	3,433,234	58.8	12,287	58,508	2,020,185	159	2,091,139	23,734	.....	464	144	.....	23,801	2,563	14,069	20,111	490,015	574,901
1949	3,404,142	54.1	21,305	60,910	1,841,940	206	1,924,361	22,589	.....	678	109	.....	29,722	2,617	14,796	20,617	482,316	573,444
1950	3,802,995	51.9	29,044	72,443	1,973,574	156	2,075,217	23,353	.....	616	339	629	34,060	2,632	15,012	20,632	546,783	644,056
1951	4,286,826	52.4	47,615	77,312	2,247,711	128	2,372,766	24,465	.....	523	691	759	38,398	2,708	16,110	20,843	622,216	726,713
1952	4,508,956	50.8	61,237	77,275	2,289,836	36	2,428,384	24,825	.....	526	761	906	38,683	2,839	16,403	21,258	660,254	766,455
1953	4,771,662	49.5	80,902	72,440	2,359,998	17	2,513,357	28,501	.....	601	915	1,264	39,434	2,967	16,061	22,346	644,243	756,332
1954*	4,999,110	46.3	95,464	82,436	2,312,212	36	2,490,148	28,905	.....	1,503	761	1,642	40,636	3,081	17,021	23,368	691,106	808,023
Total	84,130,536	59.6	476,697	2,791,817	50,128,845	2,498	53,399,857	564,866	8	8,740	4,107	5,200	662,175	60,625	467,090	500,912	8,168,565	10,442,288

* WORLD OIL from private sources. B Less than 1,000 barrels. C Estimated production.

World Crude Oil Production, By Countries, By Years (Part 2)

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: U. S. Bureau of Mines annual reports, *Mineral Resources and Minerals Yearbook*, and monthly reports, International Petroleum Trade and World Petroleum Statistics, except as otherwise indicated.)

Asia Since Beginning in 1875

	ASIA—Middle East									ASIA—Far East										
Year	Bahrain	Iran	Iraq	Kuwait	Neutral Zone	Qatar	Saudi Arabia	Turkey	Middle East Total	[E]Burma-India Pakistan: Burma	Pakistan	India	China	Indonesia	Japan	New Guinea	Sakhalin	Sarawak-Brunei	[H] Tiawan (Formosa)	Total Far East	[F]Total Asia
1874																					
1875															5					5	5
1876															7					7	7
1877															10					10	10
1878															18					18	18
1879															23					23	23
1880															26					26	26
1881															17					17	17
1882															15					15	15
1883															20					20	20
1884															28					28	28
1885															30					30	30
1886															38					38	37
1887															29					29	29
1888															37					37	39
1889											94				53					147	147
1890											118				52					170	170
1891											190				53					243	243
1892											242				69					311	311
1893											299			600	106					1,005	1,005
1894											327			688	173					1,188	1,188
1895											372			1,216	170					1,758	1,758
1896											430			1,427	237					2,094	2,094
1897											546			2,552	262					3,360	3,360
1898											542			2,964	319					3,825	3,825
1899											941			1,796	539					3,276	3,276
1900											1,079			2,253	871					4,203	4,203
1901											1,431			4,014	1,117					6,562	6,562
1902											1,617			2,430	996					5,043	5,043
1903											2,510			5,770	1,209					9,489	9,489
1904											3,385			6,508	1,219					11,112	11,112
1905											4,137			7,850	1,347					13,334	13,334
1906											4,016			8,181	1,564					13,761	13,761
1907											4,344			9,983	1,718					16,045	16,045
1908											5,047			10,283	1,871					17,201	17,201
1909											6,677			11,042	1,887					19,606	19,606
1910											6,138			11,031	1,829					18,998	18,998
1911											6,451			12,173	1,737					20,361	20,361
1912											7,117			10,846	1,659					19,622	19,622
1913		1,857							1,857		7,930			11,172	1,940			141		21,183	23,040
1914		2,910							2,910		7,410			11,422	2,636			318		21,786	24,696
1915		3,616							3,616		8,202			11,920	2,928			392		23,442	27,058
1916		4,477							4,477		8,491			12,547	2,963			629		24,630	29,107
1917		7,147							7,147		8,079			13,180	2,861			542		24,662	31,809
1918		8,623							8,623		8,188			12,778	2,441			504		23,911	32,534
1919		10,139							10,139		8,736			15,508	2,238			596		27,078	37,217
1920		12,230							12,230		8,375			17,529	2,221			1,020		29,145	41,375
1921		16,673							16,673		8,734			16,958	2,233		2	1,411		29,338	46,011
1922		22,247							22,247		8,529			17,066	2,055		7	2,849		30,506	52,753
1923		25,230							25,230		8,406			19,870	1,804		9	3,940		34,029	59,259
1924		32,373							32,373		8,416			20,473	1,814		80	4,163		34,946	67,319
1925		35,038							35,038		8,274			21,422	1,915		87	4,257		35,955	70,993
1926		35,842							35,842		8,011			21,243	1,785		181	4,942		36,162	72,004
1927		39,688	338						40,026		8,032			27,459	1,789		440	4,943		42,663	82,689
1928		43,461	713						44,174		8,741			32,118	1,944		677	[G]5,223		48,703	92,877
1929		42,145	798						42,943		8,747			39,279	2,023		[D]1,134	5,290		56,473	99,416
1930		45,828	913						46,741		8,292			41,729	1,950		[D]1,805	4,907		58,683	105,424
1931		44,376	830						45,206		8,200			35,539	2,050		2,734	3,854		52,377	97,583
1932		49,471	836						50,307		8,817			39,001	1,630		2,631	3,796		55,875	106,182
1933	31	54,392	917						55,340		8,743			42,606	1,455		2,338	4,490		59,632	114,972
1934	285	57,851	7,689						65,825		10,503			46,925	1,834		2,881	5,140		67,283	133,108
1935	1,265	57,273	27,408						85,946	7,181	[E]	2,038		47,171	2,249		2,545	5,546		66,730	152,676
1936	4,645	62,718	30,406				20		97,789	7,588	[E]	1,978		50,025	2,440		3,212	5,209		70,452	168,241
1937	7,762	77,804	31,836				65		117,467	7,848	[E]	2,162		56,724	2,488		3,656	6,009		78,887	196,354
1938	8,298	78,372	32,643				495		119,808	7,538	[E]	2,488		57,318	2,511		[C]3,821	6,913		80,589	200,397
1939	7,589	78,151	30,791				3,934		120,465	7,873	[E]	2,327	4	62,087	2,654		4,000	7,097		86,042	206,507
1940	7,074	66,317	24,225				5,075		102,691	7,731	[E]	2,302	10	62,011	2,639		4,000	7,047		85,740	188,431
1941	6,794	50,777	12,650				4,310		74,531	7,762	[E]	2,899	57	53,704	1,929		4,000	6,864	62	77,307	151,838
1942	6,241	72,256	19,726				4,530		102,753	2,500	[E]	2,792	340	24,000	1,652		4,000	3,000	48	38,332	141,085
1943	6,572	74,612	24,848				4,868		110,900	1,000	[E]	2,735	447	48,294	1,727		5,000	4,500	38	63,741	174,641
1944	6,714	102,045	30,943				7,794		147,496	750	[E]	2,784	505	22,260	1,601		5,000	6,000	40	38,940	186,436
1945	7,309	130,526	35,112				21,311		194,258	725	[E]	2,363	484	7,600	1,544		6,000	2,100	14	20,830	215,088
1946	8,010	146,819	35,665	5,931			59,944		256,369	15	[E]	2,193	513	2,100	1,343		6,000	2,050	16	14,230	270,599
1947	9,411	154,998	35,834	16,225			89,852		306,320	59	356	1,863	374	8,020	1,276		[C]7,000	12,970	22	31,940	338,260
1948	10,915	190,384	26,115	46,500			142,853	13	416,780	341	490	1,875	533	31,765	1,122	135	7,000	20,124	23	63,408	480,188
1949	10,985	204,712	30,957	90,000		750	174,008	95	511,507	248	941	1,906	730	43,206	1,353	1,726	7,000	25,108	22	82,240	593,747
1950	11,016	242,475	49,726	125,722		12,268	199,547	108	640,862	532	1,281	1,867	800	48,400	2,048	1,748	7,000	30,958	23	94,657	735,519
1951	10,994	127,600	65,122	204,910		18,009	277,963	133	704,731	858	1,348	1,949	900	55,453	2,337	1,746	7,000	37,506	21	109,118	813,849
1952	11,004	10,100	141,100	273,433		25,255	301,861	146	762,899	942	1,580	1,900	1,000	62,495	2,100	1,725	7,000	38,300	18	117,060	879,959
1953	10,978	9,800	210,268	314,592		31,025	308,294	179	885,136	1,061	1,762	2,215	1,000	75,148	2,101	1,751	7,000	36,848	17	128,903	1,014,039
1954*	10,994	14,016	252,722	347,955	6,434	35,654	347,845	309	1,015,929	1,278	1,935	2,555	5,475	77,318	2,126	4,064	7,000	36,427	31	138,209	1,154,138
Total	164,886	2,547,369	1,161,131	1,425,268	6,434	122,961	1,954,569	983	7,383,601		362,620		13,202	1,536,450	107,109	12,895	122,240	363,923	395	2,518,834	9,902,435

[B] Less than 1,000 barrels. [C] Estimated production [D] Year ended September 30. [E] Separation of British India and Burma prior to 1935 not available from U.S. Bureau of Mines data used here. Data by Dudley Stamp in "Petroleum Development and Technology, 1933" and in A.I.M.E. "Transactions" indicate cumulative through 1934 as follows: Burma 184,528, India 20,756. Pakistan included with India prior to 1947. [F] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [G] Beginning of production in Brunei. [H] Formosa included with Japan prior to 1941. * WORLD OIL from private sources.

AVAILABLE JOHNSTON by AL CAPP

STOP!!
IT'S CROOL T' STUFF THAT CRITTER IN A HOLE!!
WE HEARS CATS' WHISKERS MEASURES OIL-WELL INSIDES!!-
Al Capp
NO!!- YOU HEARD THE JOHNSTON HYDRAULIC HOLE CALIPER IS THE CAT'S WHISKERS, FOR CHARTING BORE-HOLE DIAMETERS!!
IT LOGS SUB-SURFACE FORMATIONS, TO GIVE AN ACCURATE PROFILE-
SPEAKIN' O' PROFILES, YO' JOHNSTON BOYS GOT MIGHTY HAN'SOME ONES!!-
SORRY!!- WE GOTTA LOG A WELL, WIF THAT CALIPER THAT SAVES RIG-TIME!!

C-5411

Copr. Capp Enterprises 1954

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HOUSTON, TEXAS

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FORMATION AND CASING TESTING — JOHNSTON

World Crude Oil Production, By Countries, By Years (Part 3)

(Complete production history of world, in thousands of barrels of 42 U. S. Gallons. Sources: U. S. Bureau of Mines annual reports, *Mineral Resources and Minerals Yearbook*, and monthly reports, International Petroleum Trade and World Petroleum Statistics, except as otherwise indicated.)

Europe, 1857-1900

YEAR	Italy	Rumania	[F] U.S.S.R. (Russia)	[F] Total Europe	YEAR	Germany	Italy	Poland	Rumania	[F] U.S.S.R. (Russia)	[F] Total Europe	YEAR	Germany	Italy	Poland	Rumania	[F] U.S.S.R. (Russia)	[F] Total Europe
1856	....	....	....	....	1871	....	[B]	....	90	165	255	1886	74	2	306	168	18,006	18,556
1857	....	2	....	2	1872	....	[B]	....	91	185	276	1887	74	1	344	182	18,368	18,969
1858	....	4	....	4	1873	....	[B]	....	104	475	579	1888	85	1	467	219	23,049	23,821
1859	....	4	....	4	1874	....	1	150	103	583	837	1889	68	1	515	298	24,609	25,491
1860	....	9	....	9	1875	....	1	158	108	697	964	1890	108	3	659	383	28,691	29,844
1861	[B]	17	....	17	1876	....	3	164	111	1,321	1,599	1891	109	8	631	488	34,573	35,809
1862	[B]	23	....	23	1877	....	3	170	108	1,801	2,082	1892	101	18	646	593	35,775	37,133
1863	[B]	28	41	69	1878	....	4	176	109	2,401	2,690	1893	100	19	693	535	40,457	41,804
1864	[B]	33	65	98	1879	....	3	215	110	2,761	3,089	1894	123	21	949	508	36,375	37,976
1865	2	39	67	108	1880	9	2	229	115	3,001	3,356	1895	121	26	1,453	576	46,140	48,316
1866	1	42	83	126	1881	29	1	287	122	3,601	4,040	1896	145	18	2,444	543	47,221	50,371
1867	1	51	120	172	1882	58	2	330	136	4,538	5,064	1897	166	14	2,226	571	54,399	57,376
1868	[B]	56	88	144	1883	27	2	365	139	6,002	6,535	1898	184	15	2,376	776	61,619	64,961
1869	[B]	59	202	261	1884	46	3	408	211	10,805	11,473	1899	192	16	2,314	1,426	65,955	69,903
1870	[B]	84	204	288	1885	41	2	465	193	13,925	14,626	1900	358	12	2,347	1,629	75,780	80,126

Europe and Africa, 1901 to Now

	EUROPE													AFRICA				Australia-N. Zealand	Rest of World
YEAR	Albania	Austria	Czecho-slovakia	Great Britain	France	Germany	Hungary	Italy	Netherlands	Poland	Rumania	[F] U.S.S.R. (Russia)	Yugoslavia	[F] Total Europe	Egypt	Algeria	Morocco	Total Africa		
1901						314		16		3,251	1,678	85,168		90,427						20
1902						354		19		4,142	2,060	80,540		87,115						26
1903						446		18		5,235	2,763	75,591		84,053						36
1904						627		26		5,947	3,599	78,537		88,746						40
1905						561		44		5,766	4,421	54,960		65,752						30
1906						579		54		5,468	6,378	58,897		71,376						30
1907						757		60		8,456	8,118	61,851		79,242						30
1908						1,009		51		12,612	8,252	62,187		84,111						30
1909						1,019		42		14,933	9,327	65,970		91,291						20
1910						1,032		51		12,673	9,724	70,337		93,817						20
1911						1,017		75		10,519	11,108	66,184		88,903	21			21		20
1912						1,031		54		8,535	12,976	68,019		90,615	214			214		20
1913						857		47		7,818	13,555	62,834		85,111	98			98		20
1914						781		40		6,436	12,827	67,020		87,104	753	1		754		20
1915						703		44		5,352	12,030	68,548		86,677	212	4		216		10
1916						656		51		6,587	8,945	65,817		82,056	404	8		412		25
1917					[G]	642		41		6,228	3,721	63,072		73,704	943	9		952		29
1918					363	270		35		6,032	8,730	27,168		42,598	1,935	7		1,942		25
1919				48	2	334	265		35		6,096	6,618	31,752		45,150	1,517	5		1,522		20
1920				69	3	356	246		35		5,607	7,435	25,430		39,181	1,042	4		1,046		20
1921				94	3	389	274		32		5,167	8,368	28,968		43,295	1,255	3		1,258		20
1922				120	1	496	319		31		5,227	9,843	35,692		51,729	1,188	9		1,197		22
1923				74	1	494	346		34		5,402	10,867	39,147		56,365	1,054	9		1,063		24
1924				76	2	497	406		39		5,657	13,369	45,355		65,401	1,122	11		1,133		24
1925				158	3	459	541		61		5,960	16,650	52,448		76,280	1,226	12		1,238		23
1926				150	2	478	653		41		5,844	23,314	64,311		94,793	1,188	9		1,197		17
1927				112	2	504	663		47		5,342	26,368	77,018		110,056	1,267	8		1,275		13
1928				94	1	512	630		46		5,492	30,773	[D]84,745		122,293	1,842	8		1,850		15
1929				93		535	704		45		4,988	34,758	[D]99,507		140,630	1,868	20		1,888		38
1930				157	[B]	523	1,182		59		4,904	41,624	[D]125,555		174,004	1,996	16		2,012		40
1931				134	[E]	520	1,606		124		4,662	49,127	162,842		219,015	2,038	[E]		2,038		54
1932				126	[E]	530	1,608		208		4,116	53,815	154,367		214,770	1,895	[E]	7	1,902		62
1933	11			122	[E]	562	1,665		204		4,072	54,020	154,840		215,496	1,663	[E]	7	1,670		71
1934	10			178	[E]	557	2,187		151		3,913	62,043	174,318		243,377	1,546	[E]	6	1,552		96
1935	41	44		133	[E]	541	2,996		119		3,812	61,310	182,386	2	251,384	1,301	[E]	4	1,305	5	4
1936	273	50		127	[E]	503	3,115		123		3,789	63,659	186,206	1	257,846	1,278	[E]	4	1,282	5	4
1937	619	221		123	[E]	502	3,176	16	116		3,716	52,452	193,241	4	254,180	1,196	[E]	22	1,218	4	4
1938	752	383		130	[E]	513	3,861	288	101		3,763	48,487	204,956	9	263,243	1,581	[E]	27	1,608	4	4
1939	934	1,240		120		500	4,487	1,103	91		3,898	45,648	216,866	10	274,897	4,666	[E]	27	4,693	3	4
1940	1,497	2,808		163	124	496	7,371	1,881	85		3,891	43,168	218,600	10	280,094	6,505	[E]	27	6,532	3	14
1941	1,334	4,238		183	223	414	6,303	3,183	95		1,793	40,517	238,150	10	296,443	8,546	[E]	27	8,573	3	
1942	1,601	5,899		271	605	463	5,191	5,037	101		2,794	42,094	227,470	10	291,536	8,275	[E]	41	8,316	2	
1943	1,001	7,478		300	839	356	4,973	6,347	86	1	3,500	39,182	200,750	10	264,723	8,953		39	8,992	2	
1944	334	8,218		185	703	300	6,154	6,277	55	12	3,000	26,191	275,000	220	326,649	9,416	4	32	9,452	2	
1945	267	3,074		91	532	202	3,935	5,018	53	41	750	34,772	148,953	200	197,888	9,406	2	26	9,434	3	
1946	1,000	5,734		196	412	368	4,539	5,146	83	435	866	31,434	157,673	160	208,046	9,070	1	20	9,091	2	
1947	2,000	6,285		210	351	356	4,032	4,330	81	1,478	951	28,552	187,463	290	236,379	8,627	1	21	8,649	2	
1948	1,500	5,149		204	323	369	4,489	3,647	71	3,443	1,039	34,000	218,000	270	273,504	13,398	1	100	13,499	3	
1949	2,188	6,100		292	338	411	5,947	3,791	71	4,314	1,125	33,700	337,700	470	296,447	15,997	2	136	16,135	8	
1950	2,800	10,200		292	340	909	8,107	3,700	63	4,897	1,205	32,000	226,200	780	331,493	16,373	24	305	16,702	8	
1951	1,200	15,477		644	335	2,036	9,681	3,500	135	4,942	1,502	31,000	285,000	1,092	356,544	16,311	49	587	16,947	7	
1952	1,100	20,400		740	407	2,377	12,435	3,500	487	4,975	1,700	45,000	322,400	1,067	416,588	16,464	348	749	17,561	9	
1953	1,400	21,100		900	410	2,561	15,504	3,800	656	5,688	1,800	52,000	363,000	1,204	470,023	16,501	641	761	17,903	8	
1954*	1,825	29,200		1,095	442	3,688	18,371	6,570	546	6,466	2,008	47,450	412,750	1,095	531,506	13,806	587	894	15,287	8	
Total	23,687	154,298	8,104	6,404	25,974	162,845	67,134	5,378	36,692	286,828	1,433,036	7,945,898	6,914	10,163,192	215,957	1,803	3,869	221,629	91	1,044

[B] Less than 1,000 barrels. [C] Estimated production. [D] Year ended September 30. [E] No more data available. [F] Includes fields in Russian Asia other than Sakhalin.
[G] France's earlier production credited to Germany. * WORLD OIL from private sources.

THE NEW CF&I SEAMLESS TUBE MILL

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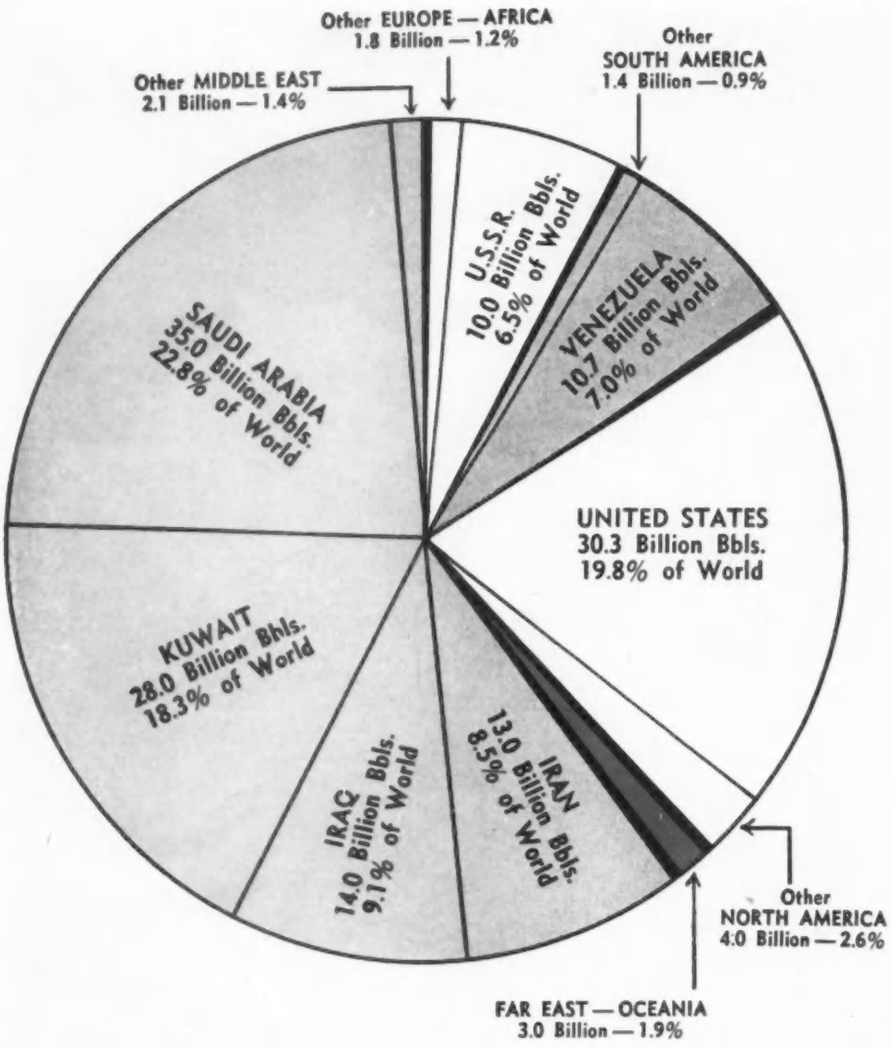


World Crude Reserves . . . Climb

16.5 billion barrels to peak of 153 billion.

By ROBERT E. SPANN, World Oil Staff

World crude oil reserves reached a new peak of 153,308,573,000 barrels at the end of 1954, according to a World Oil estimate compiled with the aid of numerous qualified sources.

The new estimate represents a gain of 16,431,091,000 barrels, or 12 percent for the year, after a record production of slightly less than 5 billion barrels. While the increase in world reserves in 1954 was the smallest in three years, it left the oil producing nations with a new high average of 30.9 years' supply at last year's rate of production.

Last year's gain in crude oil reserves reflected re-evaluations of previous estimates due to extensions and developments in proved areas, revisions due to better information for some areas, and changes due to a few major discoveries. Significant new sources of petroleum were found in Canada, France, Germany, Iraq and Mexico, and numerous smaller deposits were found elsewhere. New discoveries, however, played a less important role in the over-all increase in world reserves in 1954 than in previous postwar years.

Reductions in estimated reserves were recorded for Brazil, Netherlands, Egypt, Bahrain, Japan—all of which result from natural declines without discoveries of offsetting new deposits—and in Western New Guinea.

Middle East oil producing nations, with an over-all increase of 13,035,000,000 barrels, accounted for almost 80 percent of the total world gain in reserves in 1954. The revised estimate for the area, which World Oil has made on a conservative basis, places Middle East oil reserves at 92,110,000,000 barrels, or 60 percent of the world total and twice the volume of crude oil reserves in the Western Hemisphere.

The gain in Middle East reserves resulted from a 5 billion-barrel increase in the estimate for Saudi Arabia and an 8 billion barrel increase in Kuwait, a small part of which was offset by a decline in Bahrain. Saudi Arabian reserves at the year's end rose to 35 billion barrels, keeping the nation No. 1 in oil reserves for the second year, with a wide margin over second-place U. S.

Saudi Arabia's gain last year was due to a slight north extension in the Abqaiq field, extension of the offshore Safaniya field, and a major extension of reserves in the Ghawar field.

Kuwait oil reserves recorded the largest gain of any nation, partly due to an upward revision of the previous estimate, plus the extensions of the Burgan field northward to the Magwa producing area and eastward to the Ahmadi Ridge area. The three are believed to form a single field, with reserves estimated at 28 billion barrels, making Kuwait the third ranking nation in oil reserves.

Iraq recorded two discoveries—Jambur, 25 miles southeast of the Kirkuk field, and Bai Hassan, west of Kirkuk—both of which tested production of 10,000 barrels daily and upward on the initial wells. Further development is under way to evaluate these discoveries, and the estimate for Iraq was left unchanged at 14 billion barrels.

Late in 1954, American Independent Oil Company reported a new discovery in the Neutral Zone between Saudi Arabia and Kuwait. Until this is evaluated the estimate for the Neutral Zone has been left unchanged at 300 million barrels. World Oil has not changed its estimate of Iranian reserves since 1951, and this country will be reconsidered after results of the new consortium drilling operations are computed.

North America recorded a gain of 1,680,791,000 barrels in reserves to a total of 34,389,773,000 barrels, as a result of increases in the U. S. of nearly

1.4 billion barrels to 30,337,273,000 barrels (discussed in detail in the Exploration Section); a gain of 100 million barrels to 2.4 billion barrels in Canada, and a gain of 250 million barrels to 1,650,000,000 barrels in Mexico. Western Canada had its most significant development since the discovery of Leduc in 1947 with the 1953 discovery of the Pembina field.

Mexico had a significant discovery last August with the Miguel Hidalgo 1 well, which tested more than 3500 barrels daily and appeared to indicate an important extension of the Golden Lane Trend.

South American reserves were increased in 1954 by 895 million barrels to 12,091,000,000 barrels. Venezuela, second in rank to the U. S. in world production, added 800 million barrels, to make the estimate for the nation 10.7 billion barrels, as the result of new oil found in the Barinas-Apure area and in the basement of the Mara and La Paz fields, plus numerous extensions to proved areas.

European reserves were boosted by 659 million barrels to 11,650,000,000, largely as the result of re-evaluation of reserves in Russia and satellite nations, plus new discoveries in those areas, based on new information made available to WORLD OIL. The increase in Western European reserves amounted to about 160 million barrels, increasing the estimate for these countries to 654 million barrels.

The estimate for France has been nearly doubled, due primarily to the discovery of the Parentis field to give the nation 60 million barrels, considered a conservative figure by many qualified sources.

Soviet Russia (including reserves in China and Yugoslavia) controlled a total of 11,126,000,000 barrels of oil reserves at the year's end, or 7.3 percent of the world's total. Exclusive of 130 million barrels estimated for Communist China and Sakhalin Island, all of these reserves are in Europe, and the new estimate represents a gain of 539 million barrels above that of a year ago. Within the Soviet Union new discoveries have been made in the Stalingrad and Kuibishev areas and in the upper reaches of the Volga. The Russians claim a "major" discovery in the Baskir area of the Urals. In Rumania, discoveries have been made at Oltenia, Petesh and Sutea Soca fields plus extensions to the Moldavia field. Increases in other Communist countries—notably Hungary—resulted from revisions of previous estimates.

Far Eastern reserves (excluding China and Sakhalin) increased by 150 million barrels to 2,823,500,000 barrels, due to an upward revision of the estimate for Indonesia to 2.1 billion barrels.

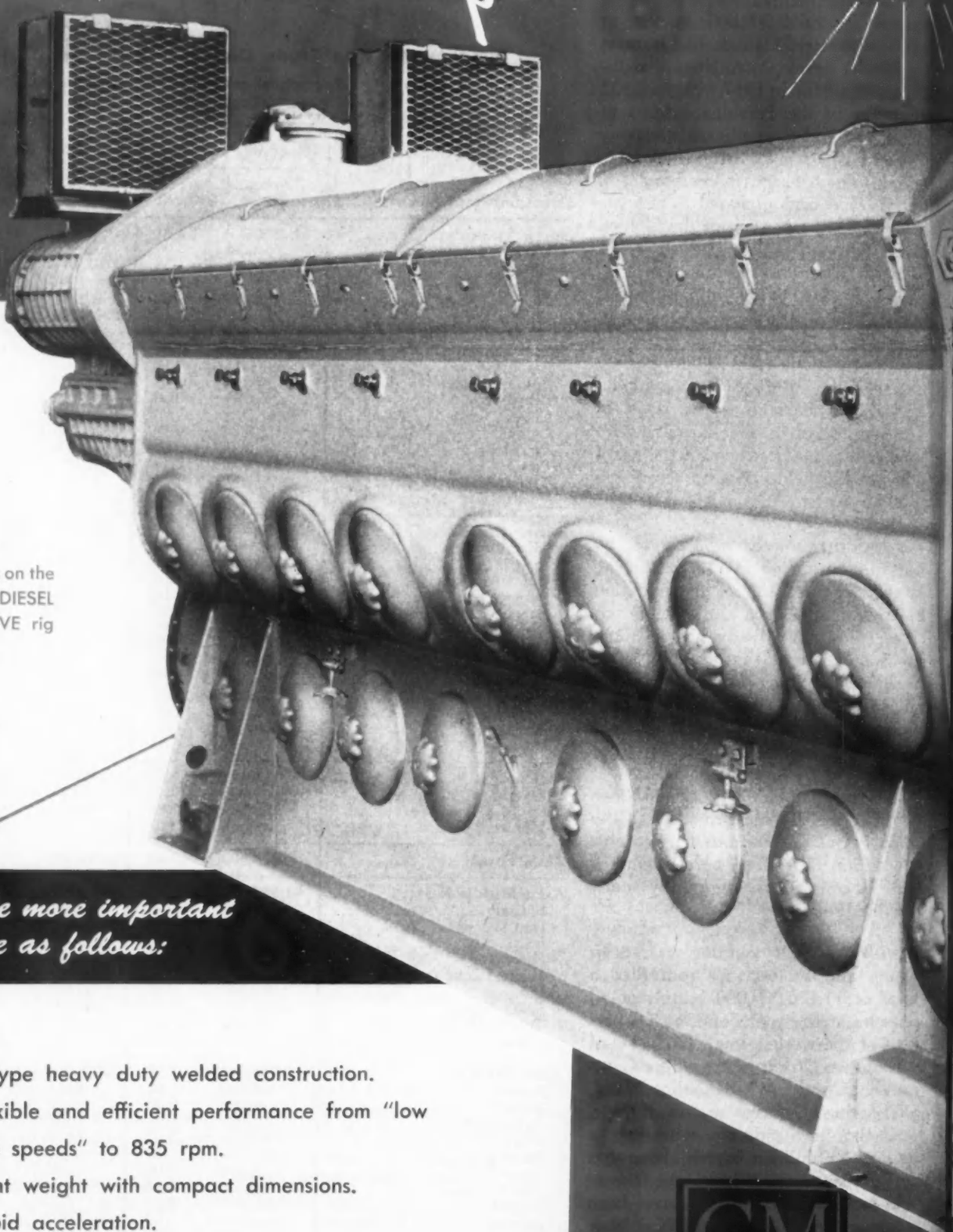
Estimated World Crude Oil Reserves at End of 1954

Crude oil only; not including natural gas liquids. Data compiled by WORLD OIL.

THOUSANDS OF BARRELS

Continent and Country	Reserves, Year End		Year's Production		Ratio Reserves to Prod.
	Thous. Barrels	% of World	Thous. Barrels	% of World	
North America	**34,389,773**	**22.43**	**2,453,641**	**49.44**	**14.0**
Alaska	500	0.00	.....	.....	.....
Canada	2,400,000	1.56	95,464	1.92	25.1
Cuba	2,000	0.00	36	0.00	55.6
Mexico	1,650,000	1.08	82,436	1.66	20.0
United States	30,337,273	19.79	2,275,705	45.86	13.3
South America	**12,091,000**	**7.88**	**808,023**	**16.29**	**14.7**
Argentina	300,000	0.19	28,905	0.58	10.4
Bolivia	30,000	0.02	1,503	0.03	20.0
Brazil	35,000	0.02	761	0.02	46.0
Chile	45,000	0.03	1,642	0.03	27.4
Colombia	450,000	0.29	40,636	0.82	11.1
Ecuador	26,000	0.02	3,081	0.06	8.4
Peru	225,000	0.14	17,021	0.34	13.2
Trinidad	280,000	0.19	23,368	0.47	12.0
Venezuela	10,700,000	6.98	691,106	13.94	15.5
Europe	**11,650,000**	**7.60**	**531,506**	**10.71**	**21.9**
Albania	30,000	0.02	1,825	0.04	16.4
Austria	300,000	0.19	29,200	0.59	10.3
Czecholovakia	9,000	0.01	1,095	0.02	8.2
France	60,000	0.04	3,688	0.07	16.3
Germany, West	400,000	0.26	18,371	0.37	21.8
Great Britain	4,000	0.00	442	0.01	9.0
Hungary	100,000	0 07	6,570	0.13	15.2
Italy (Incl. Sicily)	10,000	0.01	546	0 01	18.3
Netherlands	90,000	0.06	6,466	0.13	13.9
Poland	22,000	0.01	2,008	0.04	11.0
Rumania	600,000	0.39	47,450	0.96	12.6
U. S. S. R.	10,000,000	6.53	412,750	8.32	24.2
Yugoslavia	25,000	0.01	1,095	0.02	22.8
Africa	**113,300**	**0.08**	**15,287**	**0.31**	**7.4**
Algeria	5,300	0.01	587	0.01	9.0
Egypt	100,000	0.06	13,806	0.28	7.2
Morocco, French	8,000	0.01	894	0.02	8.9
Asia, Total	**95,063,500**	**62.00**	**1,154,138**	**23.25**	**82.4**
Asia, Middle East	**92,110,000**	**60.08**	**1,015,929**	**20.47**	**90.7**
Bahrain	235,000	0.15	10,994	0.22	21.4
Iran (Persia)	13,000,000	8.48	14,016	0.28	927.5
Iraq	14,000,000	9.13	252,722	5.09	55.4
Kuwait	28,000,000	18.27	347,955	7.02	80.5
Neutral Zone	300,000	0.19	6,434	0.13	44.6
Qatar	1,500,000	0.98	35,654	0.71	42.1
Saudi Arabia	35,000,000	22.83	347,845	7.01	100.6
Trucial Coast	50,000	0.03	.....	.....	.....
Turkey	25,000	0.02	309	0.01	80.9
Asia, Far East	**2,953,500**	**1.92**	**138,209**	**2.78**	**21.4**
Burma	45,000	0.93	1,278	0.03	35.2
India	46,000	0.03	2,555	0.05	18.0
Pakistan	22.000	0.01	1,935	0.04	11.4
China	30,000	0.02	5,475	0.11	5.5
Indonesia	2,100.000	1.37	77,318	1.55	27.2
Japan	50,000	0.03	2,126	0.05	23.5
New Guinea	60,000	0.04	4,064	0.08	14.8
Sakhalin	100,000	0.07	7,000	0.14	14.3
Sarawak-Brunei (Br. Borneo)	500,000	0.32	36,427	0.72	13.7
Taiwan (Formosa)	500	0.00	31	0.01	16.1
Australia-New Zealand	**1,000**	**0.01**	**8**	**0.00**	**125.0**
Total World, 1954	**153,308,573**	**100.00**	**4,962,603**	**100.00**	**30.9**
Total World, 1953	136,877,482	.....	4,771,662	.....	28.9

STEWART & STEVENSON *presents the* NEW



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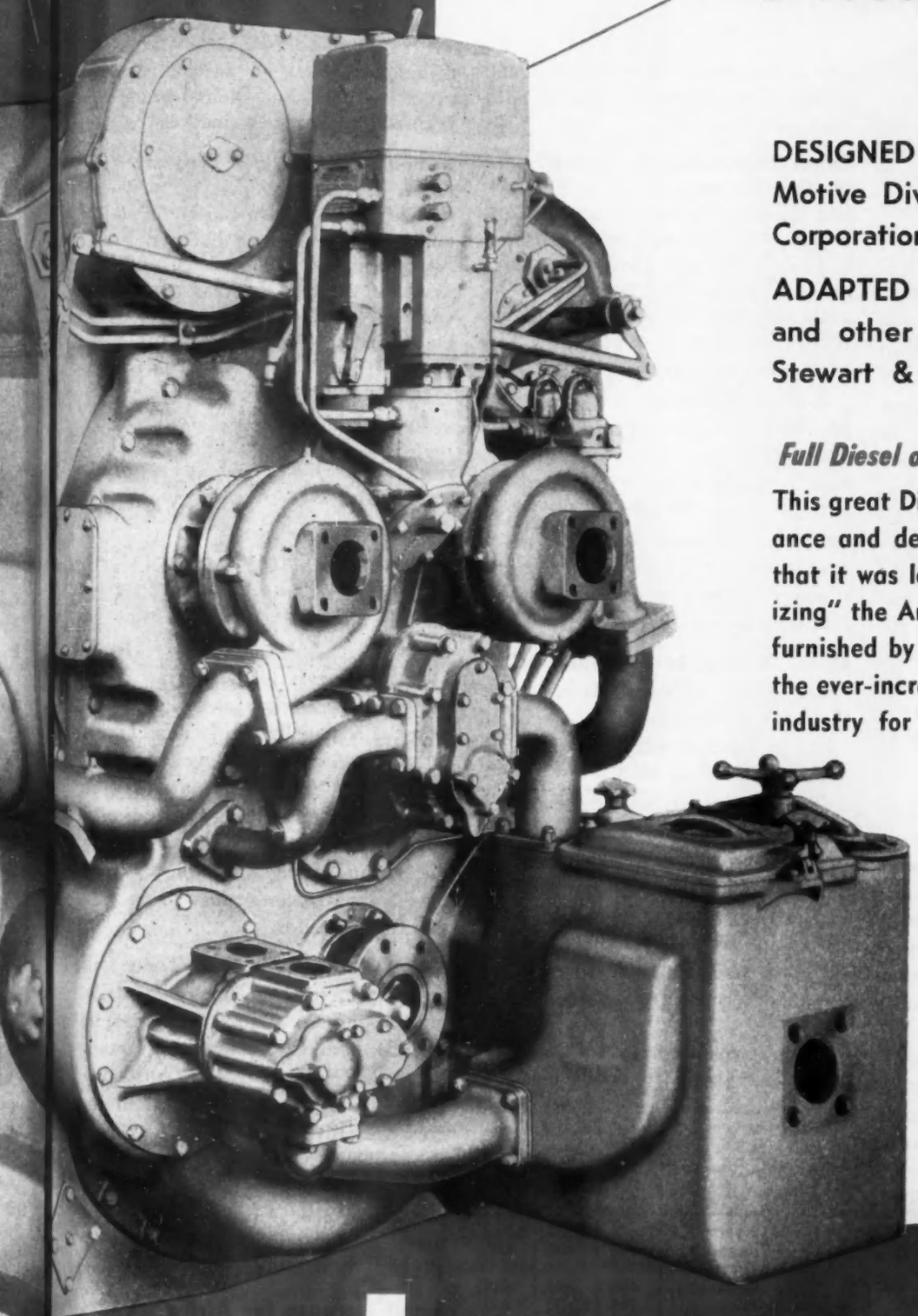

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Drilling Outside of U. S. . . . a sizeable gain in Western Canada will boost drilling activity in free world areas outside U. S. to approximately 6775 wells in 1955, a gain of 420 wells over 1954 rates.

DRILLING IN FREE WORLD areas outside the U. S. is expected to reach a new peak of approximately 6775 wells in 1955. This forecast would represent an increase of 420 completions, or 6.6 percent, over the partially estimated 6355 wells completed in the free world regions outside the U. S. during 1954. It would compare with the previous peak reached in 1953 of 6402 wells completed, and with 6029 wells drilled in 1952.

This information is based in part on a survey of companies operating in Western Canada. Concerns that drilled more than half of the wells completed in Alberta, Saskatchewan, Manitoba and British Columbia provinces during 1954 supplied WORLD OIL with data on the number of wells they expected to drill in 1955. Estimates for the remainder of the world are based upon opinions of many officials in various oil companies who operate in the areas, and on WORLD OIL's study of prospects in each region.

Increased Canadian Drilling. Drilling operations in Western Canada are likely to undergo a sizable increase in 1955. Based upon a survey of companies operating in the area, WORLD OIL forecasts the drilling of 2460 wells in Western Canada, 7.5 percent more than the 2271 wells completed during 1954. On the basis of drilling this number of wells, footage drilled in Western Canada during 1955 should amount to 9,710,000 feet. This would compare with 8,964,824 feet during 1954.

Drilling in Western Canada will account for more than one-third of the wells expected to be drilled in the free world areas outside of the U. S. during 1955.

Drilling in Eastern Canada is expected to continue at a rate of approximately 400 wells annually. Most of this drilling will be in Ontario Province, adjacent to Lake Erie. This means that Eastern and Western Canada combined are likely to have 2860 wells drilled in 1955, in contrast with 2671 in 1954.

Other North America Activity. In North America, exclusive of the U. S. and Canada, indications are that approximately 400 wells will be drilled in 1955. This drilling will be in Mexico and Cuba. The drilling of 400 wells will compare with the completion of 384 wells in 1954 and 358 in 1953 in these countries.

Additional drilling is expected in Mexico as an effort is made to further develop the Miguel Hidalgo discovery, which appears to be an important extension of the Golden Lane trend. A stepped up development and wildcat program is due in Cuba, following the discovery of the country's most important field during 1954.

More Drilling in South America. Completions in South America are likely to approximate 2260 wells in 1955, in contrast with 2100 wells in 1954 and 2250 in 1953.

This estimate will be exceeded should new concessions be granted in Venezuela during the early part of the year, an action promised since the fall of 1954. A decline in Venezuela drilling to approximately 900 completions in 1954, as compared with 951 in 1953, reflects the gradual finishing of drilling programs on present concessions. No new concessions have been granted in Venezuela since 1947.

Free World Drilling Prospects
(Exclusive of U. S. and U.S.S.R. and other Iron Curtain Countries)

REGION	Wells Forecast 1955	Wells Completed 1954*	Wells Completed 1953
Western Canada	2,460	2,271	2,212
Eastern Canada	400	400	403
North America Excl. U. S.—Canada	400	384	358
South America	2,260	2,100	2,250
Western Europe	720	690	674
Far East	270	250	244
Africa	175	170	164
Middle East	100	90	97
Total	6,775	6,355	6,402

* 1954 completions partially estimated in some areas.

Increased Activity in Western Europe. A record drilling year was experienced by Western Europe in 1954, and another increase is likely in 1955. Approximately 720 wells should be drilled in the area this year, compared with the completion of an estimated 690 wells in 1954 and 674 in 1953. Most of the drilling will be in Italy, West Germany and France.

Increased drilling will result from numerous discoveries made in Germany and the significant strike at Parentis on the Atlantic Coast of southwestern France.

Slight Gain in Middle East. About 90 wells were drilled during 1954 in the Middle East, and about 100 are expected to be completed in 1955. More drilling is likely in Iraq, as a result of two successful strikes made near the Kirkuk field in 1954 and continued development drilling at Kirkuk, Zubair and Rumaila fields. As yet there have been no indications of any drilling program planned in Iran by the group of eight companies that have formed a consortium to operate the Iranian fields.

More Wells in Far East. There will be some increase in Australian drilling, despite the disappointing results in 1954 of stepout wells to the Rough Range discovery in Western Australia. Indonesia will experience a small increase, mostly in Brunei and Sarawak. Over-all, it is estimated that total completions in the Far East will approximate 270 wells in 1955, compared with 250 in 1954 and 244 in 1953.

Small Increase for Africa. Discovery of a new field in Egypt, continued development work in Morocco, plus more exploratory drilling in several countries, will result in about 175 completions in Africa in 1955, in contrast with 170 in 1954 and 164 in 1953.

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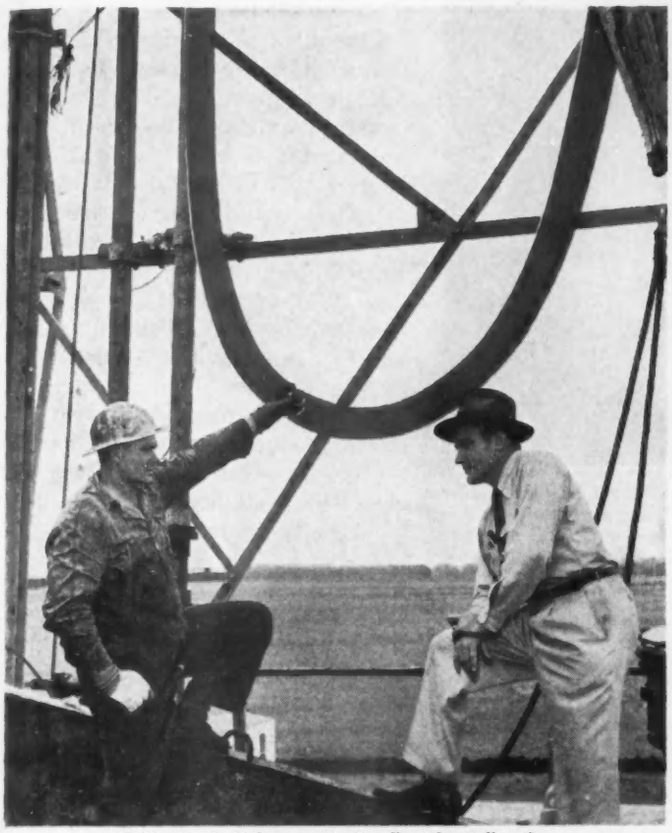

Driller D. C. Helms on rig 3 tells John Fuller the U. S. Royal 4 has been on the job over 4 years.

Standard drilling rig No. 3 of Prince Drilling Co. Says "Red": "Driller D. C. Helms at the left in the photo, uses Royal 4 without ever worrying about how high the drilling pressures get. Even at the current depth of 16,500 feet U. S. Royal 4 has never blown. No matter what the style, make or size of mud pump, you can count on Royal 4. This U. S. Royal 4 has been in service now for 4 years, at a cost of less than a cent per foot drilled. Toolpusher is Ted Kirby."

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THIS IS PARENTIS 1, Esso Standard's discovery well of Parentis oil field, about 47 miles south of Bordeaux, France. It is producing about 3000 barrels daily, and with Parentis 3 is producing most of the average field production of 6800 barrels a day. The field now has five producers, with oil being shipped by tank cars to Esso Standard S.A.F.'s refinery at Port Jerome, France. In the photograph, left to right, are Paul Prim, Michel Kopff, Bernard Garreau, Ray P. Walters, Jean Lemaire, Cecil D. Alworth, Hans Hlauschek, André Martin, Michel Bleriot, Roger Sablier (sitting), and Raymond Huther.

a WORLD of OIL

By DON KLIEWER, WORLD OIL Staff

Albania: Two producing wells have been drilled to below 9000 feet each in Berat zone by State Monopoly for Petroleum, with output for both during the first month totaling slightly more than 1300 barrels . . . One year trade pact—first with a Western nation—has been signed with Italy under which 166,800 barrels of crude worth almost $505,000 will be exported to that nation.

Australia: Australasia Oil Exploration, Ltd., has found commercial quantities of natural gas at 4500 feet in its wildcat at Reids Dome, near Springsure, 150 miles west of Rockhampton in Queensland . . . Lucky Strike Drilling Company, Tulsa, is drilling ahead with its Cherwell Creek 1 test, near Maryborough in Queensland, about 400 miles from the Australasia project.

Canada: Imperial Oil, Ltd., will spend $9 million on oil and gas exploration program in British Columbia's Peace River area, including five deep wells, other shallower tests over a three-year period. With final agreement to be reached, Pacific Petroleums, Ltd.; Canadian Atlantic Oil Company, Ltd.; Peace River Natural Gas Company, Ltd.; and Sunray Oil Company are expected to join Imperial in the undertaking . . . Southern Production Company, Fort Worth, Texas, and Canadian Atlantic Oil Company, Calgary, have concluded a pact under which SPC will spend $10 million for oil and gas exploration in Alberta and British Columbia by mid-1958.

Costa Rica: Union Oil Company of California has scheduled an active exploration drilling program for 1955.

East Germany: Scarcity of natural gas has brought a ban on its use for room heating purposes; and cooking with gas is now on a rigid schedule.

France: Fropex, a joint venture of Standard Oil Company of California and The Texas Company, is seeking a 5-million acre exploratory drilling concession in Paris basin . . . Esso Standard, Parentis field discoverer, hopes to double its 4-million-acre concession in the southwest.

Germany: Deutsche Erdoel-AG. has extended Hohne oil field northeast with Hohne 108, which is producing 190 barrels of light oil daily through ⅛-inch choke at 4495 feet . . . Good oil traces have been found in Hohenham 18, drilled to 7900 feet by Elwerath-Preussag a mile north of Escheburg . . . First tanker load of Wafra field crude has been delivered from the Neutral Zone by American Independent Oil Company . . . Wintershall AG. has put into use its new 37-mile, 8-inch pipe line between Georgsmarienhuette, near Osnabrueck, and Rehden gas field, whose reserves will furnish 18 Mmcf. daily . . . Deep well drilling footage in October, recently reported, amounted to 191,990 feet, thus total footage for first 10 months of 1954—1,792,792 feet—surpassed that for all of 1953, which amounted to 1,791,049 feet.

Hungary: Communists claim 1954 crude production of 8.5 million barrels, equal to an increase from 1953 of about 1 million barrels—if the Communist figure is correct.

India: Assam Oil Company will hike Digboi oil field production this year to an estimated 5400 barrels daily, highest level in field history except for wartime emergency period . . . Well 961, latest drilled in East Kharjan, is called by AOC one of Digboi's best producers ever . . . Seismic studies are scheduled for Digboi's eastern section . . . Geological Survey says there is no likelihood of oil in the Deccan trap region.

Italy: The 102-mile, 16-inch, 127 Mmcf.-a-day gas pipe line between Cortemaggiore and Genoa has been completed . . . Purfina Italiana has ordered construction of two supertankers of 32,000 d.w. by Ansaldo Company of Genoa.

Mexico: In line with exploration plans, Pemex has filed with Department of Economy requests for drilling permits at Carmen and Palizada in Campeche State and Jonuta in Tabasco State.

New Guinea: Test well at Omati 1 in Papua has reached almost 14,000 feet, and a second well is drilling below 7000 feet—both owned by The British Petroleum Company, Standard-Vacuum Oil Company and Australian interests.

Pakistan: An 80-mile span of the 16-inch Sui field gas pipe line between Khairpur and Nawabshah has been completed . . . Sui's reserve is estimated as sufficient to supply 100

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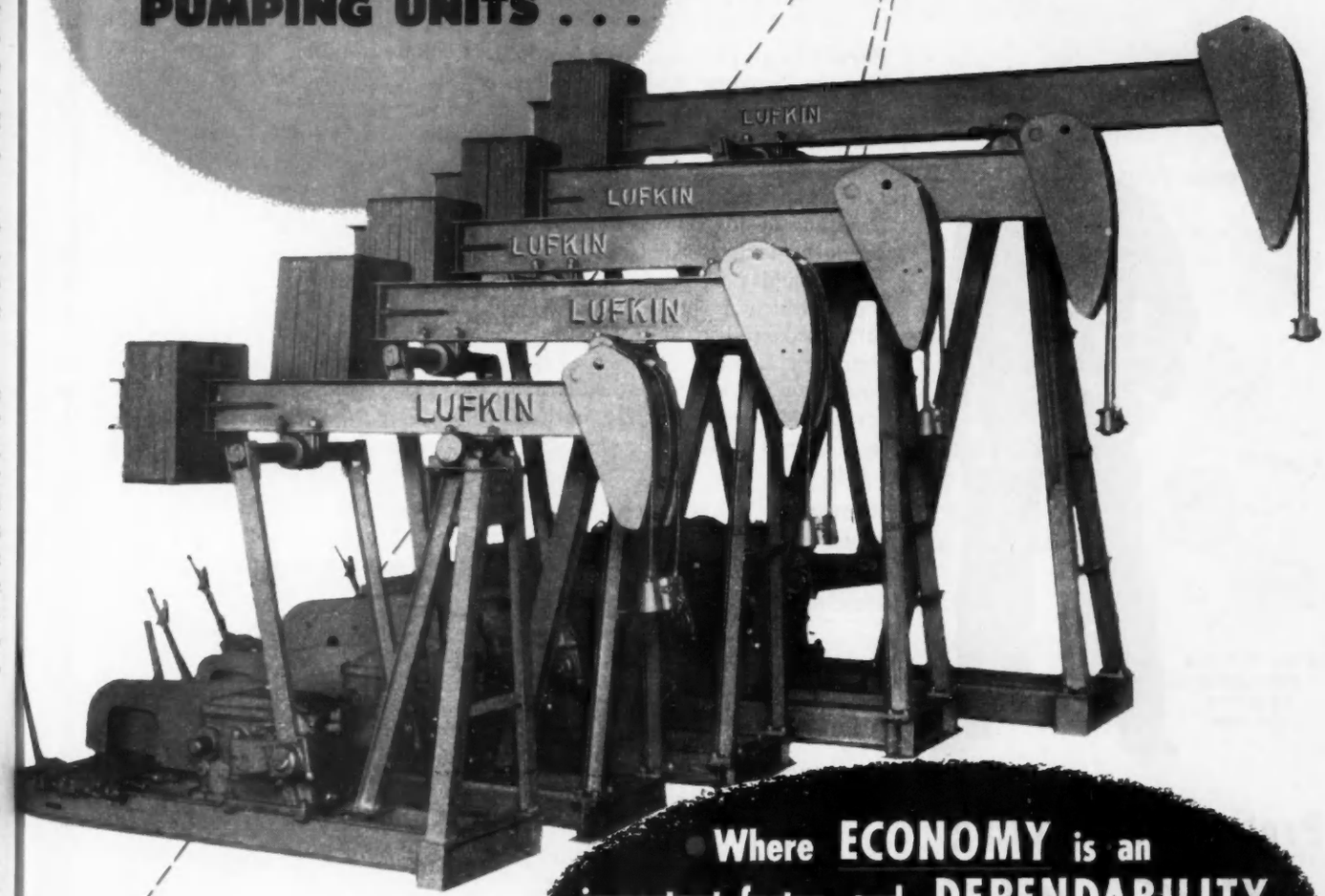

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Mmcf. daily for 60 years . . . Standard-Vacuum Oil Company's exploration is scheduled to begin soon in Southeast Sind . . . An aeromagnetic survey of the Indus basin currently is under Stanvac consideration.

Persian Gulf: A four-month underwater seismic survey has been begun off the territory of Abu Dhabi by The British Petroleum Company and Compagnie Francaise des Petroles.

Peru: Douglas Oil Company's subsidiary has brought in an oil well two miles northwest of its initial discovery of June, 1954. The new producer, 1200 feet offshore on coastal side of Lobitos structure, was yielding 90 barrels daily of 38-gravity crude through a quarter-inch choke from 3266 feet . . . Douglas plans a 5000-foot offshore wildcat a half mile northwest of the second discovery . . . Compañia Petrolera Lobitos, offsetting Douglas concession, reports its second discovery at 6485 feet with daily production at a rate of 530 barrels of 39-gravity crude.

Rumania: Search for more crude sources has failed, but Ploesti reports indicate geophysical surveys have located small gas deposits . . . Current exploratory efforts include seismic, gravimetric and electric operations.

Russia: Communist claims put 1954 crude production at 422 million barrels.

Sicily: Gulf Oil Corporation reportedly has decided to extend its research activity near Ragusa and Agrigento after successful results of latest seismic studies . . . A pipe line will be built between Ragusa and Augusta to facilitate refining of Ragusa crude in the RASIOM refinery at Augusta . . . Four gas wells have been completed west of Lentini . . . Very heavy crude has been discovered at more than 7000 feet in a test well near Vittoria.

Switzerland: Cantons of Zurich, Aargau, St. Gallen, and Thurgau are seeking uniform terms for the granting of oil concessions, including procedure for granting exploration, drilling and development permits . . . One obstacle to the effort: at least 75 percent of the shares of the company to which such a concession is granted should be held by Swiss citizens.

Syria: Government has announced it will ask bigger royalties from foreign oil companies operating within the country.

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What's Happening

AMONG WORLD OIL EN

PAUL L. KARTZKE, vice president, Shell Oil Company, Calgary, Alberta, Canada, has been elected chairman of the board of governors of the Canadian Petroleum Association. Appointed as vice chairmen were CHARLES HAY, of Hi-Way Refineries Limited, Regina, Sask., and E. H. VALLAT, Triad Oil Company Limited, Calgary.

Paul L. Kartzke

Kartzke is vice president in charge of exploration and production for Shell's Calgary area. A native of Idaho, he is a graduate in civil engineering from the California Institute of Technology. He joined Shell in 1935 as a junior engineer in Ventura, California, and subsequently served in various positions in Bakersfield, Los Angeles and San Francisco. In 1948, he became division production manager at Casper, Wyo., and was in charge of production when the company discovered oil in the Williston Basin at Richey, Mont.

Kartzke became area manager at Calgary in February, 1953, and the following November was appointed vice president. He is also a vice president of Shell Oil Company of Canada, Limited.

•

Recent Creole Petroleum Corporation personnel changes in Venezuela are:

WILLIAM G. AERTKER, transferred from senior administrative analyst, Organization and Procedure Staff, to supervisor, Community Integration Committee Coordinator's Office, Executive Department, Caracas; W. A. AUSTIN, JR., takes charge as supervisor engineer, Engineering Sub-Section, Pipe Line Section, Production Department, Caracas, transferred from Tia Juana; D. H. BANCROFT, named assistant district superintendent, Lagunillas, transferred from International Petroleum Company, Colombia; J. L. R. BERGENDAHL, transferred from Tia Juana to the Gas-Gasoline Unit, Petroleum Engineering Section, Production Department, Caracas.

E. R. BOWER, transferred from Maracaibo to Caracas as supervisory petroleum engineer, Production department; F. DE LARA, in charge of Employment Section, Industrial Relations Group, Caracas district, substituting for L. M. Voight; DR. T. ESPINOZA UNDA, named assistant medical manager, Caracas, transferred from Caripito, where he was hospital director and medical group head; W. Z. GANSKOPP, appointed head, Gas-Gasoline Section, Production department, Caracas, transferred from Jusepin; D. W. GETGEN, named acting supervisor, Budget and Cost Group Production department, replacing N. E. Elmore, on vacation; A. C. JANSHUTZ, will be temporarily in charge as coordinator of Procedures Statistics and Auditing, Comptroller's department, on training assignment, during the absence of H. D. Schersten, on vacation; J. JARKOWKI, to be in charge of the Industrial Relations Group, Caracas district, during the absence of Stephen P. Bredin; C. F. LINDSLEY, JR., named secretary to executive committee, Caracas; D. C. MEYER, appointed head of the Geophysical Section, Geological department, to replace W. C. Merritt; L. F. NEUMANN, appointed supervisor of the organization and procedures staff and chairman of the Caracas Materials Standard Sub-Committee, succeeding C. F. Lindsley, Jr.

DR. G. R. PIERCE, appointed supervisor, geological field parties, Geological department; M. A. RODRIGUEZ, takes charge as supervisor, office services of the administrative section, Production department, Caracas; E. W. SENG, appointed administrator, House Purchasing Plan, Caracas District; A. O. SETTAR, now administrative assistant to Production department manager, Caracas, on training assignment; J. L. TARBES, on development assignment as head of the Labor Relations Section, Industrial Relations group, Caracas district; O. R. TORO, named acting supervisor of the General Services Section, Materials department, during the absence of P. Rodriguez, on vacation; R. L. TOWNE, transferred to Tia Juana District as senior engineer, pipe line; J. N. WARD, on training assignment as surplus materials supervisor, Materials department, Caracas, during the absence of H. V. Wheeler, on vacation; G. P. WEPSALA, temporarily assigned group supervisor, drilling engineering, Production department, Caracas, replacing E. W. Drake.

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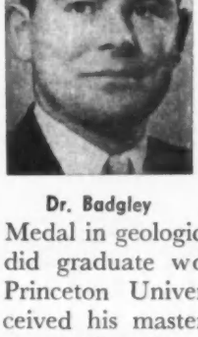
DR. PETER C. BADGLEY, former district geologist for Husky Oil and Refining Limited, has joined West Maygill Gas and Oil Limited, Calgary, Alberta, Canada, as exploration manager.

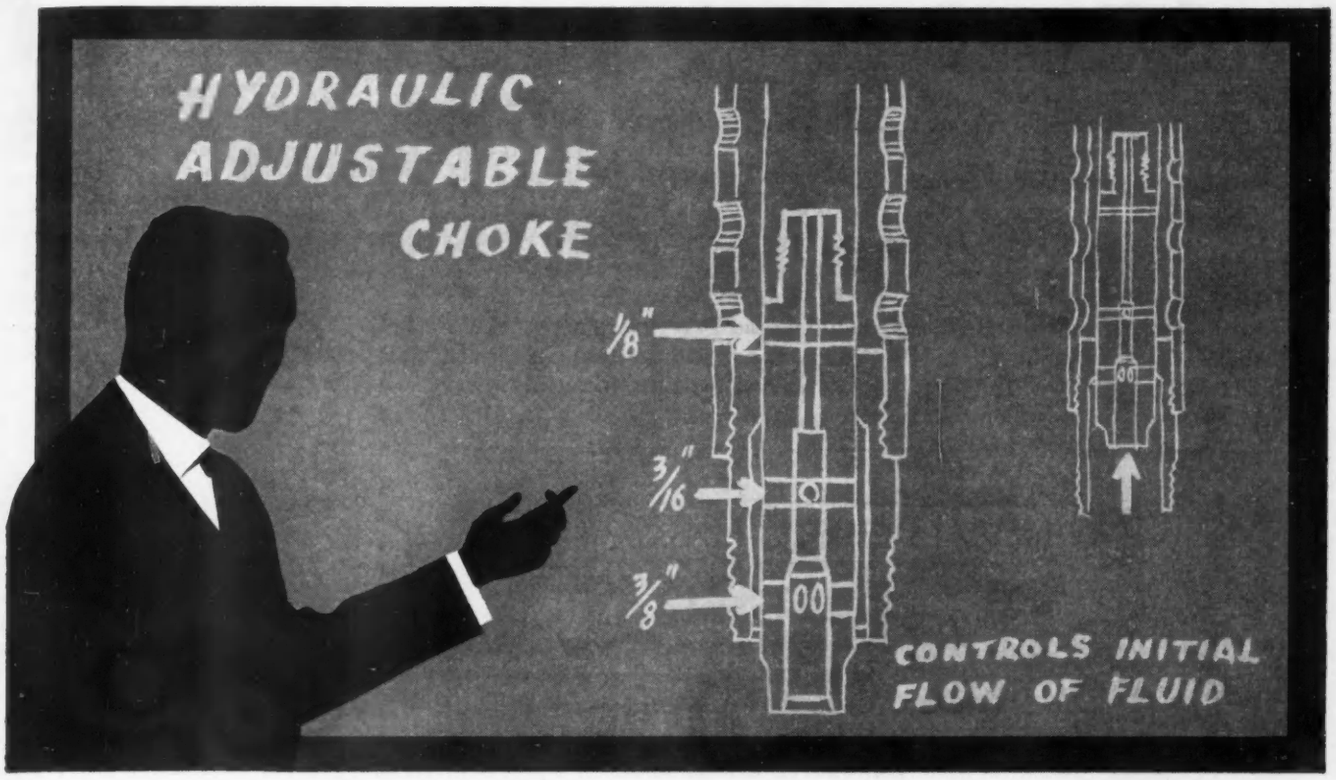


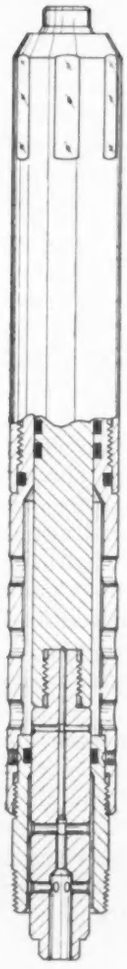
Dr. Badgley

Dr. Badgley was graduated from McGill University with a bachelor of science degree and the Logan Gold Medal in geological sciences. Later he did graduate work in geology at Princeton University, where he received his master's and doctor's degrees. He also did postgraduate research in sedimentology and petroleum reservoir engineering on an Imperial Oil research fellowship at the Mineral Industries School of the Pennsylvania State University.

He has had extensive exploration experience in Canada, and he has been associated with Western Oil & Gas Division of the Geological Survey of Canada, with Standard Oil Company of California and, until recently, with Husky Oil.

Dr. Badgley is a member of American Association of Petroleum Geologists, Alberta Association of Professional Engineers, Geological Society of America, Society of Exploration Geophysicists, and Alberta Society of Petroleum Geologists.





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211 SERVICE CENTERS—JUST MINUTES AWAY FROM ANY RIG

EDWIN E. DOWELL, formerly of Newsweek magazine and the New York Herald-Tribune, has been named public relations manager for Vacuum Oil Company of South Africa (Pty.) Ltd. Vacuum is a subsidiary of Standard-Vacuum Oil Company in New York.

A resident of Port Washington, N. Y., Dowell assumed his new duties in November, with headquarters in Capetown.

Standard-Vacuum is a fully-integrated petroleum organization which operates in South and East Africa, India, Southeast Asia, Australia and the Far East.

Dowell was international editions manager for Newsweek and was employed by the Herald Tribune in Europe and New York prior to entering the petroleum industry with Standard Oil Company (New Jersey).

In South Africa, Dowell, besides handling public relations activities for Vacuum, will also act as public relations liaison for other Stanvac interests in the Union.

LEONARD M. BERGER, for the past nine years vice president and general manager of Sinclair Cuba Oil Company, S.A., has been elected president of that company. He succeeds L. V. STANFORD, who has been president of Sinclair Cuba since 1945.

L. M. Berger

•

R. C. BROWN, Calgary, Alberta, Canada, has been elected president of Hudson's Bay Oil & Gas Company, Ltd. He succeeds L. F. McCOLLUM, president of Continental Oil Company, who at the same time was elected chairman of the board of Hudson's Bay Oil & Gas Company.

Brown has been vice president, general manager and a director of the company for the past five years. Prior to joining Hudson's Bay Oil & Gas Company, he was associated with Continental Oil Company for almost 24 years, serving in various important assignments in a number of oil producing areas in the United States.

•

HOWARD M. HERRON has retired as chairman of the executive committee of the Caltex group of companies after 44 years of service.

Herron was chosen the first president of the Caltex group when the organization was formed in 1936. In February, 1946, he became chairman of the board of directors of the Caltex group, and in January, 1950, he was appointed chairman of the executive committee. During World War II, he was vice chairman of the Foreign Operations Committee, Petroleum Administration for Defense.

Herron began his career in the petroleum business at the turn of the century, working in the oil fields of Oklahoma as a tank builder for the Prairie Oil and Gas Company. In 1910 he joined The Texas Company as a stenographer in the refinery at Port Arthur, Texas, and in 1916 was promoted to superintendent of the Port Arthur terminal.

Four years later, in 1920, after serving in superintending capacities in terminals at Bayonne, N. J., and Marcus Hooks, Penn., he became general superintendent of northern terminals for Texaco, and in 1926 was

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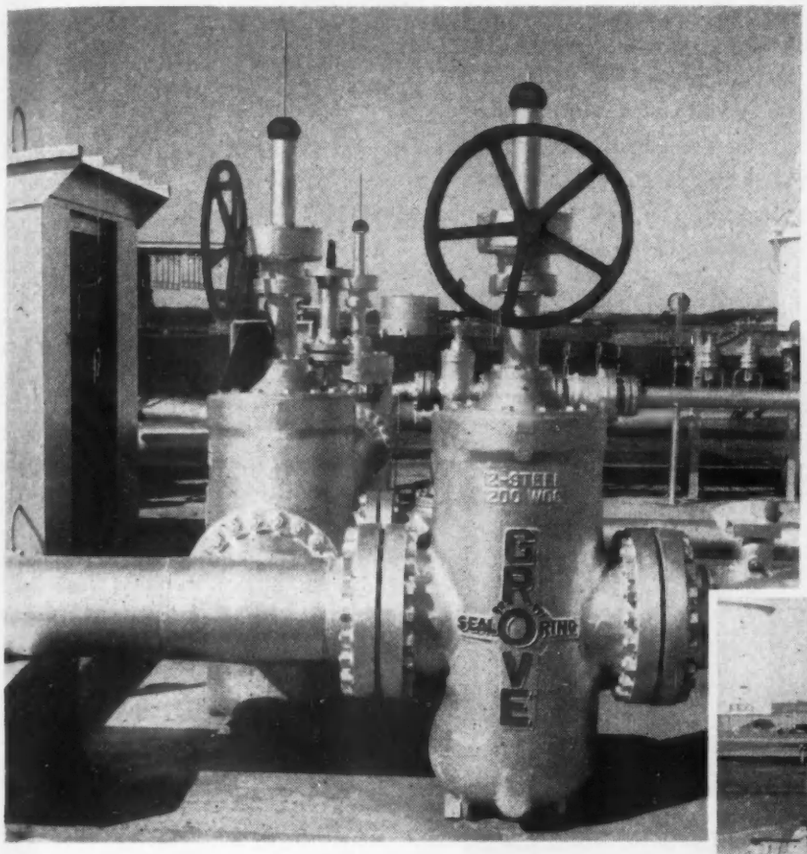

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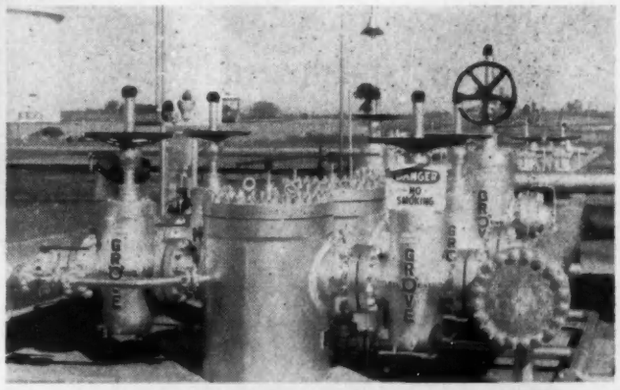

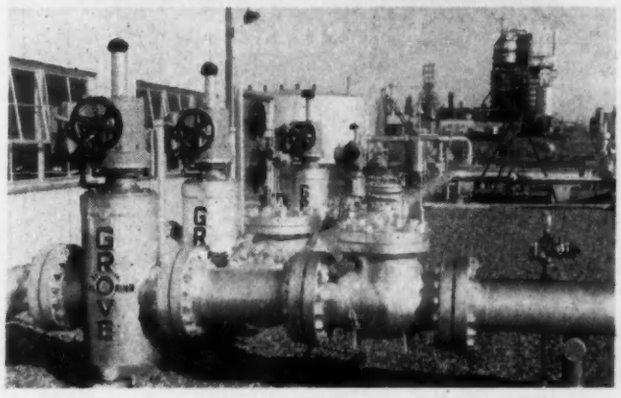

Over 175 Grove Seal-"O"-Ring Gate Valves are in operation on the Oklahoma Mississippi River Products Line extending from Duncan, Oklahoma to West Memphis, Arkansas. Illustrated here are some of the varied applications at the Duncan and Fort Smith stations.

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promoted to general superintendent of terminals.

By 1928 Herron was assistant manager of The Texas Company's Export department, and in this capacity visited the company's facilities in Europe, South Africa, Australia, New Zealand, China, and the Philippines. In 1935, he became general manager of the Export department, and in July of the following year, when the Caltex group was formed, he moved to the new organization as its first president.

DON BROWN, formerly a geologist with Wilcox Oil Company, Tulsa, has resigned to become chief geologist with Oil Drilling and Exploration, Ltd., an Australian company.

Brown was graduated from University of Oklahoma in 1952 with a B.S. degree in geology and joined Wilcox Oil that year. Prior to his resignation, he had been in charge of the Geological department. He is a member of the Tulsa Geological Society.

VINCENT L. VERDIANI has been appointed acting manager of the Foreign department of Sun Oil Company. Formerly assistant manager of Sun's Fuel Oil department, he succeeds WILLIAM C. TAYLOR, who is retiring because of ill health. Taylor joined the company in 1933 and was named head of its Foreign department in 1947.

Vincent Verdiani

Verdiani was employed by Sun Oil as industrial products representative at Syracuse in 1947, and came to the general offices at Philadelphia as a technical representative in 1952. He transferred to the Fuel Oil department last year.

Prior to joining Sun, he was with the Syracuse Merchants National Bank and Trust Company (1934-42), and the air conditioning and construction firm of J. Cashier Co., Syracuse (1945-47).

•

H. D. FOX will be promoted to chief geologist, Sohio Petroleum Company, Canada, replacing DR. REIN DE WIT, who is transferring to Calgary, Alberta.

Fox was born in Albany, N. Y., in November, 1921. He received a B.S. in geology from Union College, and was awarded an M.S. by the University of Wyoming. During World War II, he was in the U. S. Navy. Fox joined Sohio in 1953, after having worked for various oil companies in the Mid-Continent and Gulf Coast areas.

•

JERRY D'ARCY, Arrow Drilling Company, has been transferred to Calgary, Alberta, Canada, as manager of the Canadian affiliate, Arrow Drilling Company Canada Ltd. D'Arcy graduated from the University of Tulsa with a B.A. degree and was an outstanding football player for the Tulsa Golden Hurricane. After graduation he was with the Tulsa University coaching staff and later entered the oil business. He has served the drilling industry in various capacities and more recently as manager of the Oklahoma, North Texas and Kansas area for Arrow Drilling Company.

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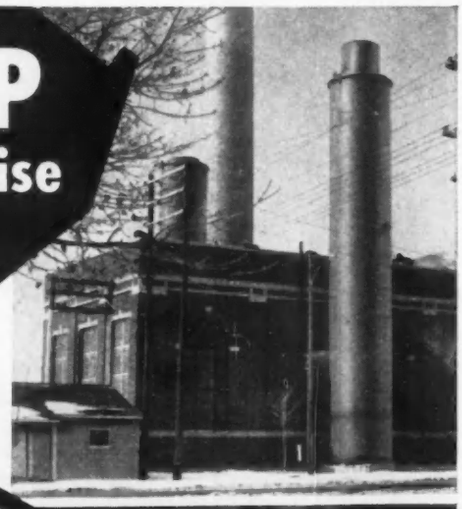
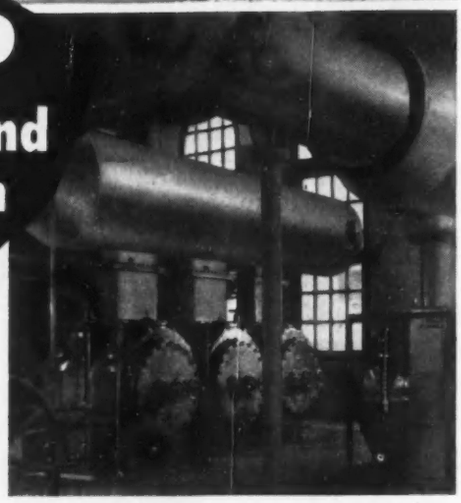
from air, steam and other gas discharges

and

STOP Pulsation and Vibration in gas and air piping





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Hamilton Chosen by Gulf Oil As Eastern Hemisphere Chief

Veteran executive will maintain closer liaison with company's producing areas from new London office.

CHARLES W. HAMILTON

THE RISING importance of Eastern Hemisphere crude oil production to its operations and the desire to maintain closer liaison with the producing nations in the area prompted Gulf Oil Corporation in the recent formation of a London divisional production office. The new office, opened in January, will coordinate the company's producing interests in Kuwait, Sicily, and the company's 8 percent share in the Iranian consortium, as well as its exploration activities in several areas in Africa.

Kuwait is Gulf's most important stake in the Eastern Hemisphere and its most important producing operation. The company has a one-half interest in the concession in the sheikhdom, the other half being held by British Petroleum Company, Ltd., formerly Anglo-Iranian Oil Company. While Kuwait's commercial production of oil did not start until 1946, it has already expanded to 952,256 barrels daily in 1954. Gulf's one-half share of the Kuwait production now accounts for a little more than 50 percent of the company's total net crude oil production. Gulf's production comes from Kuwait, U. S., Venezuela and Canada. Starting this year the company also has production from the recently discovered Ragusa field in Sicily and from Iran.

Crude oil from Kuwait has an important position in the international oil trade with the largest share of it consumed in the Eastern Hemisphere, but it also is of importance to U. S. domestic operations. Total imports of crude oil into the U. S. last year by Gulf and other American purchasers amounted to about 11 percent of the total U. S. petroleum imports. Kuwait imports into the U. S. also accounted for more than one-half of the total Middle East oil imported into this nation even though Kuwait in 1954 lost its No. 1 Middle East production lead to Saudi Arabia by a slim margin.

The Kuwait concession is operated by Kuwait Oil Company, Ltd., with headquarters in London. Previously, liaison between Gulf and the Kuwait company has been through Gulf's Foreign Production office in New York. Establishment of the London office will provide a closer contact with the operating company and with the Eastern Hemisphere nations. There are, however, no contemplated changes in the top management of Kuwait Oil Company by this move by Gulf, and each of Gulf's operating subsidiaries in the Eastern Hemisphere will continue to conduct its own operations, reporting to the London office.

For the top coordinator of its Eastern Hemisphere operations, Gulf selected Charles W. Hamilton, who has spent 42 years in foreign petroleum operations, and who has been Gulf's vice president in charge of foreign production since 1940. Hamilton was asked to postpone his planned retirement, scheduled for this spring, to take this important position.

His top assistants in London are E. S. Bleecker, exploration coordinator; R. W. McClenahan, concession coordinator; E. E. Ferrin, production coordinator; S. O. Gasperina, finances and services coordinator, and Gus Pyre, assistant to the exploration coordinator. With the exception of McClenahan all of these officials have been connected with Gulf's producing operations for more than 20 years.

Hamilton has spent 39 years of his career with Gulf, all of which has been connected with the foreign producing operations. He headed this department for the past 15 years with offices in New York. Hamilton, one of the most widely traveled men in the industry, first joined the company as chief geologist with Mexican Gulf Oil Company in 1916. He was later made general agent of the Mexican company and subsequently was directly connected with Gulf's operating subsidiaries in the Western Hemisphere.

Bleecker has 36 years of foreign production operations behind him. He started as a geologist with South American Gulf Oil Company in 1919 and after transfer to New York in 1931 as staff geologist has managed both the Eastern and Western Hemisphere producing operations of the company.

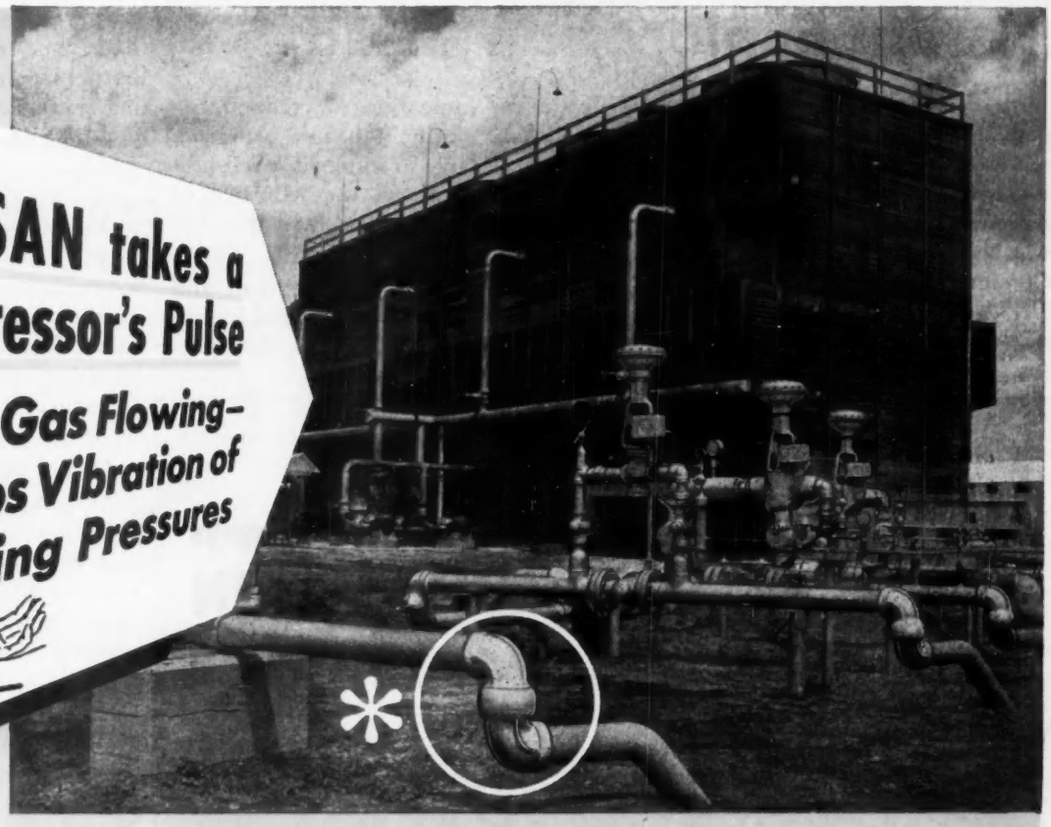
Production Coordinator Ferrin has been with Gulf for 25 years, the larger portion of his time having been spent in domestic producing operations. He was assigned to Kuwait in 1947 as chief petroleum engineer and production superintendent of the company. He was brought back to New York in 1949 as executive assistant to the manager of Eastern Hemisphere operations and later technical advisor to the vice president.

Gasperina has been in the accounting division of Gulf's Foreign Production department since 1924 and was assistant manager of accounting prior to the London assignment. Pyre started as a geologist in Venezuela in 1937 and has been in the New York office as a geologist since 1946.

McClenahan, a relative newcomer to Gulf, has been with the company since 1948 in both the New York and Pittsburgh headquarters offices. His assignment in the London office is a new position with Gulf — as liaison representative for the company with governments in the Eastern Hemisphere. Born in Egypt, he was educated in the Middle East and speaks Arabic, an important asset in dealing with the Middle East Nations.

CHIKSAN takes a Compressor's Pulse

Keeps Gas Flowing— Absorbs Vibration of Changing Pressures



Not only do the stamina and flexibility of Chiksan Joints take expansion in their stride, they absorb pulsation and vibration. When the Plymouth Oil Company wanted a better way to handle the expansion and contraction of its 2500-3500 lb. natural gas re-pressuring line in its compressor station in Sinton, Texas, back in 1946, it tried Chiksan 2-inch high pressure ball bearing swivel joints. So successful were Chiksan Joints in this application, they were adopted for 3 and 4-inch lines for the same purpose. In addition, by placing regulators, gauges and other recording equipment on a bridge using Chiksan Joints, accurate readings of the instruments could be obtained.

Since 1946, not one of these Chiksan Joints has been replaced or even repacked, and they are giving the same economical, dependable service they did when first installed.

In Texas or California — all over America and all around the world — wherever production, processing or distribution depends on the flow of liquid or gas or on the dependability of hydraulic systems, there you will find Chiksan Ball Bearing Swivel Joints on the job — adding muscle and flexibility — cutting down on shut-downs and maintenance.

Whatever your business, if gas or liquid plays a part, Chiksan's Research and Development Division can help you add efficiency, safety and economy to your operation.

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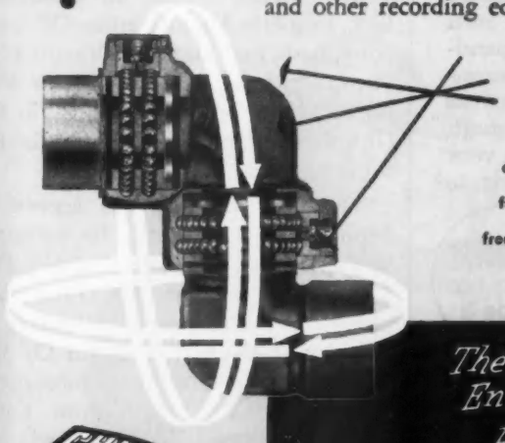

CHIKSAN Ball Bearing Swivel Joints are THE NEW TOOL of Modern Industry — with full 360° rotation in 1, 2, and 3 planes. Over 1,000 different types, styles and sizes have been developed for pressures and services from 28" vacuum to 15,000 psi and for temperature ranges from minus 75° to a plus 500° F. with packing materials for each specific type of service.

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Assam Exploration Cited

Steady progress by Assam Oil Company in seeking and developing India's oil resources is helping insure a prominent place for the oil industry in the nation's second Five-Year Plan, which was being considered by the Planning Commission.

This outlook was reported by Digboi Datori, AOC house journal, which said that indications of the oil exploration priority in the new plan have been noticeable in statements recently by spokesmen of the Ministry of Natural Resources and Scientific Research.

Referring to plans to extend and equip the geophysical section of India's Geological Survey, Dr. S. S. Bhatnagar, Ministry secretary, said the new plan "may enable us to initiate and participate in oil drilling and prospecting operations on a large scale."

Previously, K. D. Malaviya, Natural Resources deputy minister, said an oil prospecting division would be added to his Ministry. Among the places to be explored were Saurashtra and Jaisalmer in western India. A press report of the announcement made it clear, said Digboi Batori, that the division would confine its activities to areas for which licenses had not been issued to oil companies.

Digboi Batori said further:

"Undoubtedly these important developments, together with the expansion of refining capacity, are responsible for increasing the emphasis on oil in the new blueprint of India's economic progress."

In the nation's first plan, launched in 1951, no mention was made of prospecting for new sources of oil, although the Planning Commission listed it as one of the vital minerals in which India was deficient.

Since then, oil has been proved by AOC at Nahorkatiya, and the discovery is being developed steadily. In addition, a widespread geophysical survey is being conducted over other likely areas in the Brahmaputra valley, and exploration is in progress in the Bengal Basin.

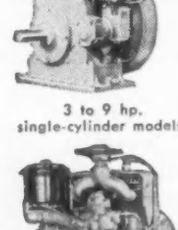
Gippsland Basin Will Be Tested by Drilling

The British Petroleum Company, Ltd., formerly Anglo-Iranian Oil Company, Ltd., and Standard Vacuum Oil Company have joined forces with Australian interests to drill in the Gippsland Basin of Victoria, in the south east corner of Australia.

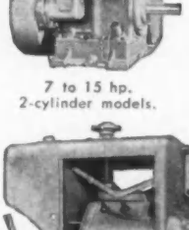
The new company is known as Frome-Lakes Pty. Ltd. Its principal shareholder is Frome-Broken Hill Pty. Ltd., which is owned by D'Arcy Exploration Co. Ltd. (a subsidiary of British Petroleum), Vacuum Oil Co. Pty. Ltd. (the Australian subsidiary of Standard Vacuum of New York) and Consolidated Zinc Pty. Ltd., one of Australia's wealthiest mining enterprises.

Minority shareholders in the new company are Lakes Oil Ltd. and Austral Oil Drilling Syndicate N.L., who held the search permits for the area in which Frome-Lakes Pty. Ltd. will op-

Vital Oil Circulating Pump powered by WISCONSIN HEAVY-DUTY *Air-Cooled* ENGINE



3 to 9 hp. single-cylinder models.



7 to 15 hp. 2-cylinder models.

15 to 36 hp. V-type 4-cylinder models.

Down at a field in Stephens County, Oklahoma, this oil circulating pump works, hour after hour, day after day. It's powered by a Wisconsin Heavy-Duty Air-Cooled Engine, best choice when you need an engine that's built to deliver continuous heavy-duty service.

And in the oil fields the story is the same wherever equipment reputation is built by reliability. Oil men know that Wisconsin Engines go on delivering dependability day after day, month after month. The reasons for this kind of service are many. Such features as tapered roller bearings at both ends of the crankshaft, and fool-proof air-cooling in all temperatures are very important performance factors. Also contributing to no-complaint operation is a trouble-free ignition system with an easily-serviced OUTSIDE magneto, along with heavy-duty construction even in those parts not vital to dependable service. No wonder, when you need power that *ranks first*, your *first choice* should automatically be Wisconsin Engines.

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Power TO FIT THE MACHINE

4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp.

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sizes of economical

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UNIBOLT Flow Rated X-Beans, for use with UNIBOLT Choke Bodies and Cage Nipples exclusively, are drilled in increments of 5 percent and 10 percent of well flow rather than in increments of 1/64-inch. Consequently, the flow of fluid or gas can be positively controlled with a degree of accuracy never before attained. If, for example, a well produces 10 bbls. through a 1/64-inch choke, to increase the choke to the next largest fractionally drilled size, 2/64-inch, would increase the production to approximately 40 bbls. On the other hand, a well that produces 10 bbls. through a size X-35 UNIBOLT X-Bean would produce only 10½ bbls. through the next largest size X-Bean, X-35.5; 11 bbls. through an X-36, and so on.

This accurate control of production is a safeguard against the harmful effect of periodically pulling a well too hard in order to make its allowable.

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crate—1400 square miles in a narrow strip 120 miles long and up to 30 miles wide running along the sea coast between the Gippsland Lakes and Wilson's Promontory.

Directors of Frome-Lakes Pty. Ltd. are Sir Norman Mighell, chairman (representing Consolidated Zinc of which he is also chairman); R. B. Dummett (managing director of Commonwealth Oil Refineries owned wholly by British Petroleum); J. D. Jacobs (Vacuum Oil Co. Pty. Ltd.); C. N. McKay and Sir Clive Steele (Lakes Oil Ltd.); and G. I. Stevenson (Austral Oil Ltd.).

General Manager is N. B. Sauve, who is also general manager of Frome-Broken Hill Pty. Ltd.

Drilling is scheduled to start immediately on what is described as a "perfect subterranean oil trap." This will be the first large-scale bid to find oil in Victoria although it was in the Gippsland Basin near Lakes Entrance that the first signs of oil in Australia were found in 1924.

About 50 wells have been drilled in the area during the last 30 years, and 37 of them have shown at least some evidence of oil. Interest has in the past been centered mainly on an area of 500 square miles underlain by marine Tertiary rocks, particularly near Lakes Entrance. There, Tertiary rocks about 1200 feet thick rest on Palaeozoic rocks of a type not favorable to oil occurrence.

Small quantities of heavy oil have been produced from glauconitic and other sands near the base of the Tertiary section but it was of an asphaltic base devoid of kerosine or gasoline and accompanied by a very heavy flow of water.

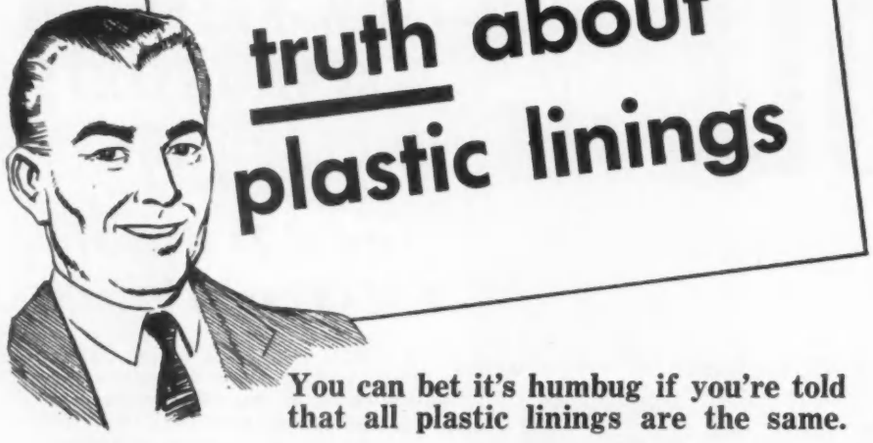
In parts where the Tertiary section is much thicker than at Lakes Entrance (up to 4000 feet), the lower beds are sandy and unfavorable for retention of oil but farther southwest, along the coast, in the general area which interests Frome-Lakes, Jurassic rocks form the bedrock of the Tertiary Basin. The presence of considerable amounts of carbonaceous material has given rise to the belief that dry gas may occur in commerical quantities.

Speculation has arisen concerning the shape, size and depth of the basin, although a clearer picture of these features is now emerging as a result of gravimetric surveys made for Lakes Oil Ltd. in 1950 by the Robert H. Ray Corporation of the U. S. and of aero-magnetic, seismic and gravity surveys by the Federal Bureau of Mineral Resources.

The basin appears to deepen southward and probably continues to deepen off shore. There may be 6000 feet of Tertiary sediments near the coast and several high gravity anomalies have been found which coincide with magnetic anomalies.

Following seismic investigation of three of these anomalies, the company mergers took place which have now insured that further exploration will be conducted with the full financial and technical backing of two leading oil companies.

The Victorian State Government has announced the granting of two more prospecting licenses west and north of the Frome-Lakes permit area and adjoining it. Woodside Lakes Entrance Oil Company will prospect in an area of 200 square miles and Mineral Ventures N.L. will investigate the possibilities of 149 square miles.



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Tube-Kote's TK-2, for example, is a phenol formaldehyde resin plastic base, specially compounded with solvents, plasticizers, and other inert ingredients. It is an exclusive plastic formula, thermo-bonded in multiple layers to the surface of metal, and provides the finest per-dollar-value protection against corrosion. Used on tubing and sucker rods, TK-2 can save you considerable shutdown time and replacement costs.

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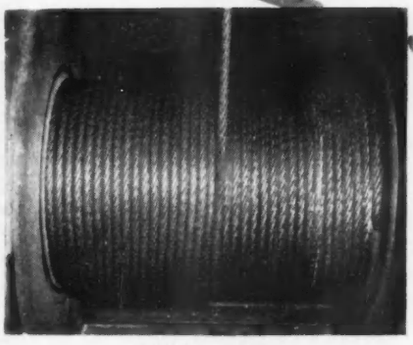
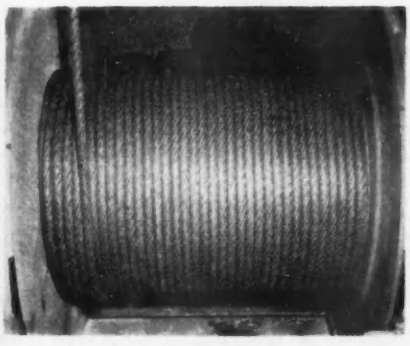


SECOND LAYER

FOURTH LAYER



Spooling on plain drums, or incorrectly grooved drums in the past, caused wire line to cut in, scrub, squeeze and pinch. This definitely kept the line from spooling evenly and made it difficult to spool fast or feed off slow. The new "Three-Point" LeBus GROOVING & COUNTERBALANCE CONTROL PYRAMID SPOOLING SYSTEM has made it possible to overcome these problems and to absolutely control the action of the wire line more than ever before. The photos at left are evidence of how evenly the line builds spools and builds up on the drum.

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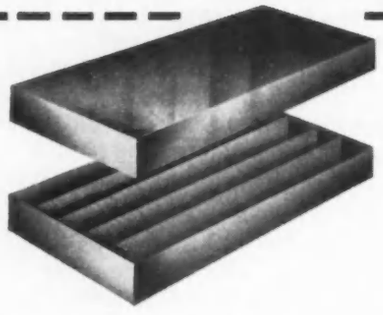
Horne Well Service Co. - - - - - - - - - 3-5396
HOUSTON
Adair Service Co. - - - - WE-6497, HU 6-3462
MIDLAND
Luccous - - - - - - - - - 4-8471, 4-4320
PETTUS, TEXAS
Edward N. Jones - - - - - - - - - - - - - 16
OKLAHOMA CITY
Rainbo Service Co. - - - ME 4-2131, ME 2-3045
WICHITA FALLS
Hudson-Eads, Inc. - - - 2-3767, 2-8584, 3-4690

CORE BOXES



Each box holds 10 feet of core, and has following copy on end:
Hole_____ From_____
To_____ Box No._____
"Project Name" printed on top and bottom of box.

Size	Length		Width		Depth
AX CORE BOX	24	x	8¼	x	1⅜
BX CORE BOX	24	x	9½	x	1¾
EX CORE BOX	24	x	7	x	1⅛
NX CORE BOX	24	x	12	x	2¼
SPECIAL 2½" CORE BOX	24	x	13⅞	x	2⅝
SPECIAL ANY SIZE					

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What's Happening

AMONG MEN IN THE INDUSTRY

W. E. Dillon

F. A. Menken

F. A. Menken and **W. E. Dillon,** both former officers of **Tide Water Associated Oil Company,** have opened petroleum consulting offices in San Francisco. Both men recently resigned from the oil company after a combined service of 46 years. Menken, formerly exploration vice president of the western Tide Water operation, directed all petroleum exploration for that company in the West Coast and Rock Mountain states and in western Canada. **W. Earl Dillon,** his associate, began his active career in geological work with Tide Water after graduation from the University of California with a geological B.A. degree. After military service, Dillon engaged in geological exploration work throughout the seven western state area and western Canada. He was an assistant vice president of Tide Water Associated, vice president of Northern Light Oil Company in Alberta, and participated actively in the Tide Water group's exploratory work in Saskatchewan.

•

The Pure Oil Company has announced promotions in the company's producing division. **Karl A. Mygdal,** assistant exploration manager will become geological representative in charge of Pure Oil's office in Calgary, Alberta. **K. Stewart Cronin,** 21 years with the company, now in charge of exploration activities in Pure's southwestern producing division at Tulsa, will become assistant exploration manager in Chicago. **John J. Collier, Jr.,** division geologist in Tulsa, will become exploration manager of Pure's southwestern producing division.

•

E. D. Brockett, Jr. has been elected a vice president of **Gulf Oil Corporation.** He will be manager of the company's Houston Production division, succeeding **B. C. Belt,** who has announced plans to retire. The company's Houston Production division embraces operations in East Texas and the Gulf Coast region of that state, Louisiana, Arkansas, Mississippi, Alabama, Georgia and Florida. Brockett joined Gulf as a roustabout in the West Texas oil fields in 1934. He was promoted to petroleum engineer stationed at Odessa, Texas, and after several years in military service, Brockett returned to Gulf as staff engineer in the Fort Worth Production division and received promotion to assistant superintendent of production of that division in 1948. Later Brockett transferred to the general offices at Pittsburgh as staff engineer and two years ago was transferred to the company's subsidiary, Mene Grande Oil Company in Venezuela, first as assistant to the general manager at Caracas, and later as manager of the production operations in Eastern Venezuela.

•

Raymond L. Tollett, chairman of the board and president of **Cosden Petroleum Corporation,** has been elected a director of the First National Bank of Fort Worth. Tollett, who resides in Big Spring, has been president of Cosden since 1940.

•

C. W. Beebe has been named chief scout for **Shell Oil Company's** Tulsa area. He succeeds **C. W. Michaels,** who retired.

•

Marvin S. Jones has been appointed assistant superintendent of **Magnolia Petroleum Company's** Land department with headquarters in Dallas. Jones has been district landman at Wichita Falls for the past 4½ years. Jones joined Magnolia in 1935 and has moved up through a series of promotions. **Robert W. Harless,** landman at Dallas, succeeds Jones at Wichita Falls; **Ralph R. Cadenhead,** landman of the Abilene district, transfers to Shreveport succeeding **A. A. Mason,** who retires.

•

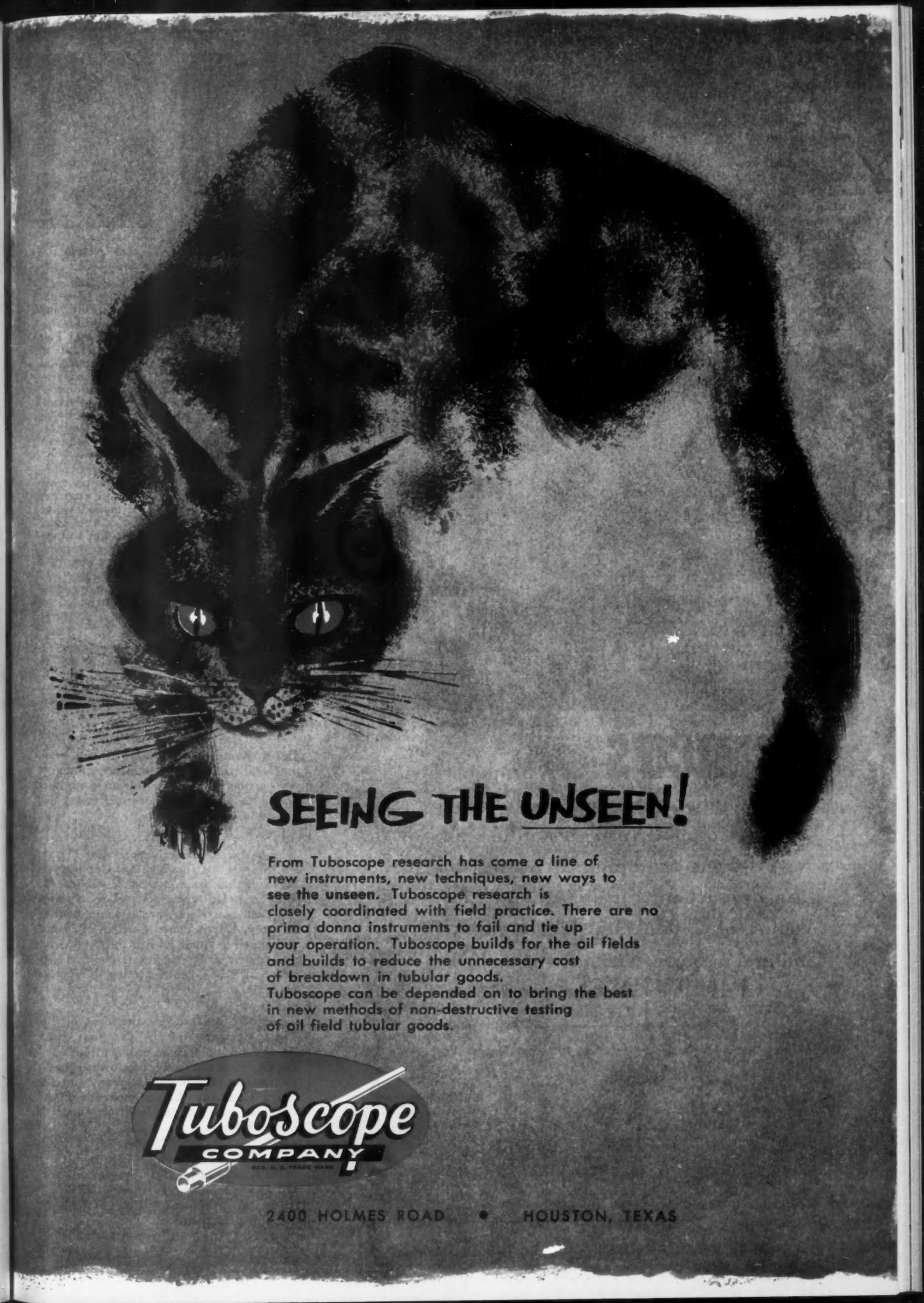
N. L. Starr has been named chief scout for **Shell Oil Company's** Houston area Exploration department. He replaces **J. W. Selby,** who retired recently after 26 years with the company.

•

Magnolia Petroleum Company announces the following promotions in the Producing division: **W. L. Morris,** petroleum engineer at the Kermit producing district, transferred to producing operations in the same district as assistant production foreman; **Clifford F. Willmon,** promoted from assistant foreman in the Duncan, Okla., producing district to production foreman there; **W. J. Mannas,** petroleum engineer at Kermit, transferred to the Electra producing district; **William N. Richardson,** petroleum engineer at Wewoka, Okla., moved to the Kermit producing district; **John W. Strayhorn,** petroleum engineer, transferred from the Kermit producing district to the Electra district; and **John L. Sanders** has been promoted from junior petroleum engineer to petroleum engineer at Magnolia's Brownfield producing district.

•

E. A. Markley, Tulsa, has retired as manager of **Sunray Oil Corporation's** Geological department after completing 33 years in the oil industry. He entered oil work in 1922 with the old Kawfield Oil Company and worked for the former Waite Phillips Company, which was merged into the former Barnsdall Oil Company, later taken over by Sunray.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Howard F. Johnston, geologist for Quaker State Oil Refining Corporation, has resigned to open offices as a consulting geologist at Parkersburg, W. Va. Johnston, a registered professional engineer in oil and gas, has had 22 years experience in the Appalachian area.

•

Paul H. Kuhns, Ponca City, a veteran of more than 42 years service with **Continental Oil Company's** Transportation department, has retired. Kuhns joined Conoco's Transportation department in Denver in 1912. He spent 18 years with Conoco in Denver, eight as chief traffic clerk, and transferred to Ponca City in 1930 as the company's traffic manager. In 1953 he was promoted to manager of the company's Transportation department.

Theodore G. Fisher is now a geologist for **Wilcox Oil Company** in the Tulsa office. Fisher has been a consulting geologist in Oklahoma City and formerly was with Cities Service Oil Company for 18 years.

•

George S. Engle, independent oil producer of Miami, Fla., has announced the promotion of **Duane C. Randall,** geologist, to the post of manager of production for the Tri-State field with offices at Evansville, Ind.

•

Wallace Cooper and **William Wells** have joined **White Eagle Oil Company** as geologists at Midland, Texas.

•

Tom L. Ingram has resigned as district geologist for **Stanolind Oil and Gas Company** in West Texas to open offices as a consulting geologist at Roswell, N. M.

Geo. Landreth

Bob Leibrock

George H. Landreth and **Bob Leibrock,** two former Stanolind engineers, have announced the formation of partnership and the opening of offices in the Wilkinson-Foster Building in Midland, Texas. This consulting petroleum engineering firm, to be known as **Leibrock and Landreth,** will handle evaluation work, reservoir analyses, geological investigations, proration, property management and well completions. During the past 5½ years, Landreth has been employed by Stanolind Oil and Gas as a petroleum engineer in the Lubbock and Midland districts and Fort Worth division office. Leibrock has been with Stanolind in various engineering capacities since 1943. After working as a research engineer in the Tulsa laboratory, he moved to the reservoir engineering section of the Tulsa general office and from there went to Lubbock as reservoir engineering section leader. He moved from there to Fort Worth as division reservoir engineer and since March, 1953, has been district engineer in Stanolind's Midland district office.

•

Tandy S. Matthews, certified public accountant who has been active in oil industry tax problems, has resigned from E. Earle Tomlins and Company and opened his own consulting office in the Oil Capital Building in Tulsa.

•

Jim R. Ramsey and **H. Alan Nelson,** graduate and professional engineers, announce the opening of their petroleum consultant offices under the firm name of **Ramsey and Nelson** in Oklahoma City.

•

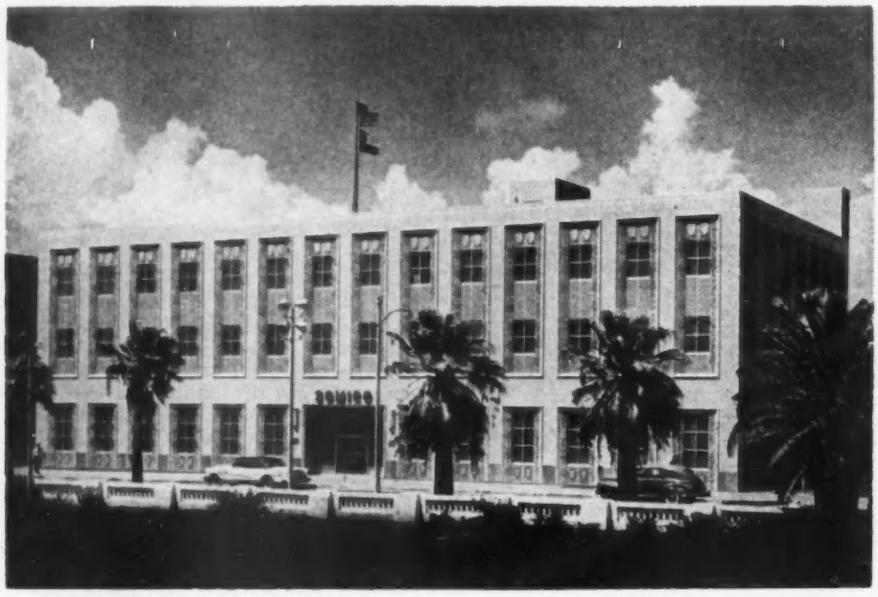
W. M. Harris, formerly supervisor of central files section for **Shell Oil Company** in Houston, has been named office services supervisor. He replaces **W. H. Cline,** who has been placed on special assignment in Houston. Harris joined Shell in 1928 and progressed through jobs in the Production department in West Texas, New Mexico and East Texas, before coming to Houston in 1936.

•

George R. Bryant, vice president of **The Texas Company** for the past four years, has resigned to become president of Jefferson Chemical Company, Inc., owned jointly by American Cyanamid Company and The Texas Company. Bryant succeeds **P. M. Dinkins,** president of Jefferson Chemical since 1946.

•

Samuel E. Sims has been named assistant to **A. K. Tyson,** managing partner of **Slick Oil Company Ltd.** of Houston. Sims formerly was chief geologist for American Republics Corporation.



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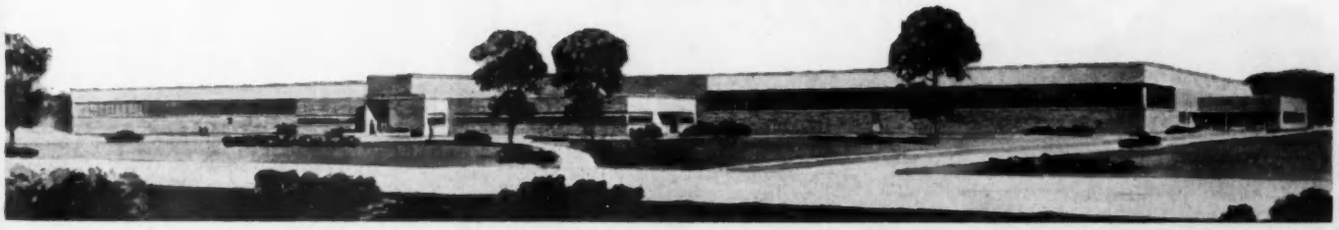


THREE CONE BITS • REAMING BITS • REAMERS • DRILL COLLARS • TOOL JOINTS • SUBS • JUNK BASKETS

DEATHS

George Benjamin Bancroft, 76, died January 13 in San Antonio, Texas. He formerly lived in Oklahoma and was one of the organizers of the Gilcrease Oil Company, serving as treasurer and a director until his retirement in 1950.

•

Edward L. Wagon, 63, assistant vice president of Sinclair Oil Corporation, died at Tuckahoe, N. Y., January 13. Wagon held various executive posts with Sinclair Oil & Refining Corporation during his 38 years of service.

Roy E. Dow, 63, of Tulsa, assistant to the general sales manger of the Bethlehem Supply Company, died January 13 in Iowa City. He had worked for Bethlehem and its predecessor, the International Supply Company, for 37 years.

•

Daniel Archibald McDougal, 89, pioneer oil man, died January 5 in Coral Gables, Fla. McDougal was one of the original operators in the Glenn Pool near Tulsa and had been active in the search for oil in Florida since 1917.

•

Roy E. Dow, 63, assistant to the general manager of sales of Bethlehem Supply Company, died January 13. He had been associated with the oil industry almost four decades, having worked for Bethlehem Supply and its predecessor, International Supply Company, for 37 years.

•

Joseph Glass, 60, of Mount Kisco, N. Y., president and director of the Middle State Petroleum Corporation, died recently in New York. He was a director of the Midstates Oil and Midben Pipe Line Corporation.

•

R. B. (Cyclone) Jackson, 77, evangelist and oil developer, died November 7 in California. He was active as a developer and operator in the oil fields of Texas, Kern County, Bakersfield, Cuyama Valley and Tejon Hills.

•

J. E. Bumpus, 79, retired oil company official of Tulsa, died January 15. He had served as superintendent for the D. W. Franchot Company, retiring in 1941.

•

Lawrence D. Bartell, 52, chief geologist for the McAlester Fuel Company, died January 16 in Magnolia, Ark. He had been with McAlester Fuel for five years and previously was with Skelly Oil Company.

•

Rolla L. Long, manager of the southern region of Hughes Tool Company, died while on a business trip to Lafayette, La., January 13. Long started with Hughes as a salesman in 1924 and rose to manager of the Ark-La-Tex district. He became manager of the southern region in 1946.

•

Clair J. Gibson, 59, a leader in oil development in California and Texas, died January 24 in Los Angeles.

•

Edward H. Chandler, Sr., 76, of Tulsa, retired general counsel of producing subsidiaries of Sinclair Oil Corporation, died January 25. Chandler was general counsel for Sinclair Prairie Oil Company, Sinclair Wyoming Oil Company, Repolle Oil Company and Sinclair Georgia Oil Company. He retired in 1948.

•

William Robert Miller, 68, of Tulsa, retired independent oil producer, died January 25. He owned widely scattered interests throughout the Mid-Continent area.

•

William James Kerwin, oil pioneer, died January 24 in Oklahoma City. Kerwin started working in the Pennsylvania oil fields in 1886. He was active in the oil booms at Coalinga, Calif.; Spindletop and Ranger, Texas; El Dorado, Ark., and others.

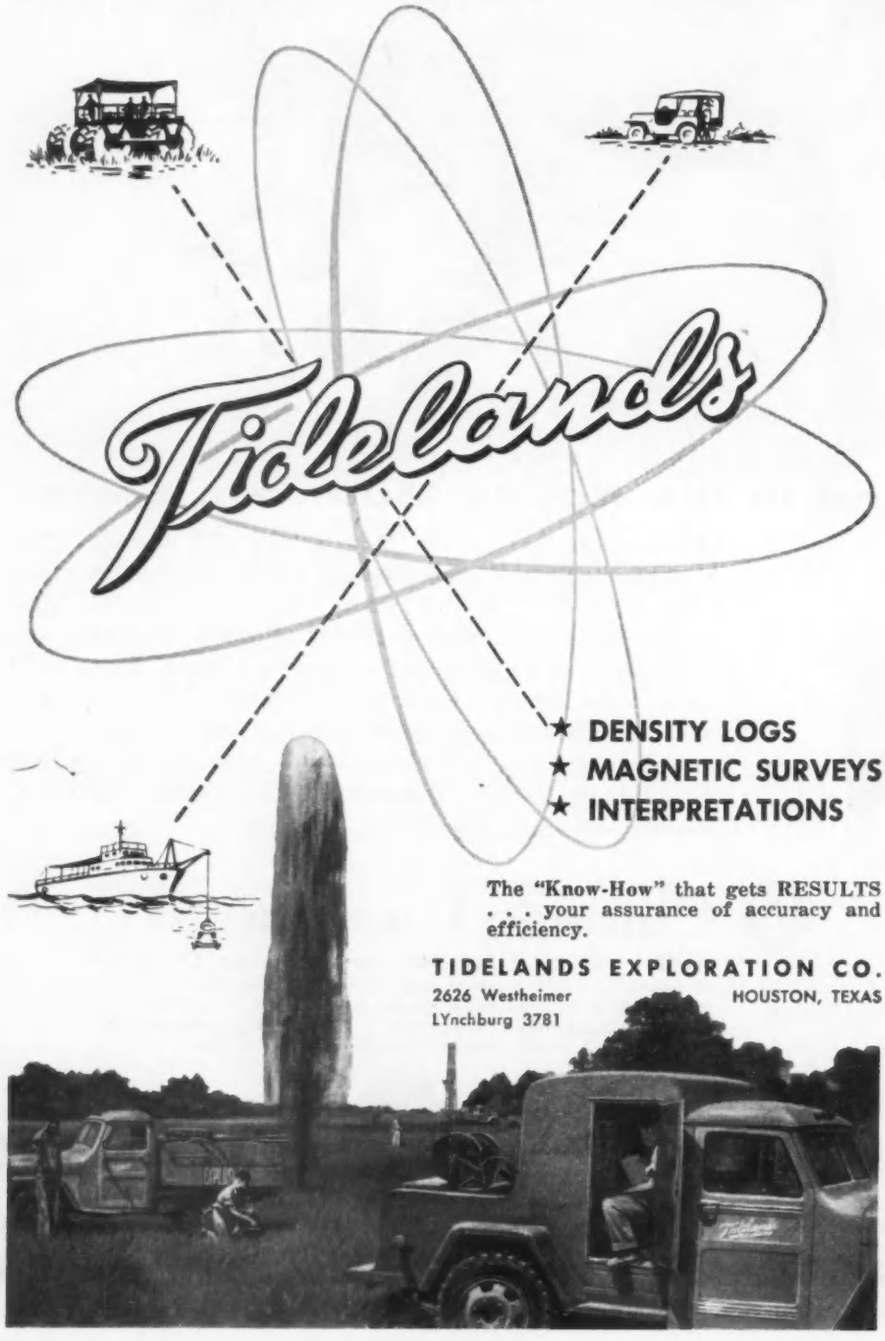
•

James Marion Hewgley, 65, of Tulsa, well known independent oil operator, died January 29 from injuries received in an automobile accident near Wagoner, Okla. A native of Tennessee, he began his oil career at El Dorako, Ark., and later was associated with the late Tom Slick, Sr., and Charles F. Urschel of San Antonio, in the Slick-Urschel Oil Company Hewgley was a principal in the formation of the Hewgley Drilling Co. and had served as president of the firm.

•

C. Morgan Ransdall, 60, of Tulsa, died January 30. He was superintendent of machine accounting for Sinclair Oil and Gas Company and had been with the Sinclair firm 37 years.

SEISMIC and GRAVITY SURVEYS on LAND and SEA



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What's Happening

AMONG INDUSTRY ASSOCIATIONS

Resources Group Plans Information Program

An information program designed to present facts to the public on the development of adequate resources of natural gas and oil will be conducted by the newly-created Natural Gas & Oil Resources Committee, of which L. F. McCollum, president of Continental Oil Company, is chairman and Paul Kayser, president of El Paso Gas Company is vice chairman. Baird H. Markham, former director of the American Petroluem Industries Committee, will serve as full-time director of the committee.

With particular reference to the natural gas industry, McCollum pointed out that with the construction in the last few years of numerous long distance transmission lines from fields in the midcontinent and southwest areas, natural gas for the first time was being used by a large segment of the public which was unacquainted with the problems which are confronted in developing new supplies to satisfy the growing demands of consumers.

The Committee will have its headquarters in the Empire State Building, New York City.

John M. Payne Heads Houston API Chapter

John M. Payne, mechanical engineer for Shell Oil Company, Houston, was elected chairman of the Houston Chapter, American Petroleum Institute in January. Payne succeeds H. E. Treichler, Jr., assistant to the president, Houston Oil Company.

John M. Payne

Other officers elected are J. L. Hoyt, Jr., general superintendent, Pan American Production Company, first vice chairman; Roy A. Bobo, Phillips Petroleum Company, second vice chairman; and A. W. Short, Reed Roller Bit Company, secretary-treasurer.

Advisors elected for two-year terms are H. E. Treichler, Jr.; J. A. Perkins, Gulf Oil Corporation; J. B. Jones, Halliburton Oil Well Cementing Company; Russell Lewis, Hughes Tool Company; Jack S. Talbot, Dowell Incorporated; and Wardell Leisk, Austral Oil Exploration Company.

Advisors elected for one-year terms are G. H. Hartung, Houston Oil Company; Moody Shook, The Texas Company; L. V. McConnel, Lane-Wells Company; H. M. Krause, Humble Oil & Refining Company; J. E. Bailey, Tide Water Associated Oil Company; and L. A. Swanson, Standard Oil Company of Texas.

East Texas Section AIME Elects 1955 Officers

John Calvert, Humble Oil & Refining Company, Tyler, Texas, was elected chairman of the East Texas Section, Petroleum Branch AIME recently. Other officers are Herb Miller, Amerada Petroleum Corporation, Longview, vice chairman; M. O. Langham, Humble, Tyler, secretary-treasurer; Oliver W. Jones, The Pure Oil Company, Van, Texas, director for one year; and A. C. DeMoss, Perforating Guns Atlas Corporation, Longview; J. C. Farris, Stanolind Oil & Gas Company, Longview; and P. J. Lehnhard, East Texas Engineering Association, Kilgore, directors for two-year terms.

Directors who still have an additional year to serve are W. T. Crowder, Lufkin Foundry & Machine Company, Kilgore; and M. L. Reed, Shell Oil, Kilgore. Gene L. Scheirman, Shell Oil, Kilgore, is section delegate.

Four State Cochairmen Announced by OIIC

The election of four new state cochairmen for the Oil Industry Information Committee in Kansas and Oklahoma have been announced.

Serving as state cochairmen for the OIIC in Kansas will be W. D. Maxwell, district production superintendent, The Carter Oil Company, Great Bend, chairman for central and western Kansas; and Jess L. Howard, special representative, Skelly Oil Company, Kansas City, eastern Kansas OIIC chairman.

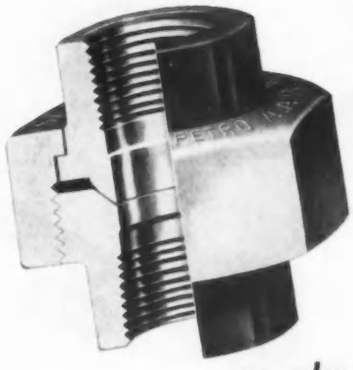
Oklahoma state chairmen will be C. M. (Ben) LaLonde, district production superintendent, Phillips Petroleum Company, Pauls Valley, OIIC chairman for western Oklahoma; and R. R. Shook, Oklahoma area manager, Sinclair Refining Company, Tulsa, OIIC chairman for eastern Oklahoma.

Retiring state chairmen are B. T. Willey, regional marketing manager, Continental Oil Company, Oklahoma City; W. M. Murray, vice president, Deep Rock Oil Corporation, Tulsa; W. G. Teaney, district marketing manager, Socony-Vacuum Oil Company, Kansas City; and C. A. Elmborg, vice president, K-T Oil Corporation, El Dorado, Kansas.

Robert A. Douglass assumed the duties of OIIC district chairman for Kansas and Oklahoma on December 1 succeeding E. A. Williford, general sales manager, Continental Oil Company, Ponca City, Okla.

The new state chairmen were elected recently at meetings in Wichita and Tulsa and will serve during 1955 and 1956.

UNDER THE TOUGHEST CONDITIONS . . .



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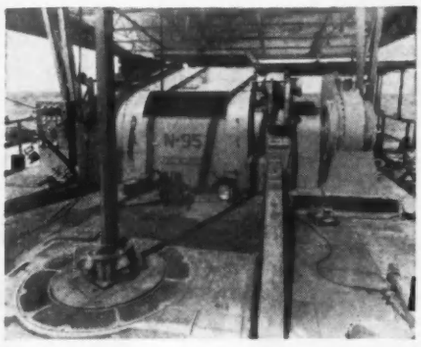
Air-Actuated Clutches prove adaptability in the oilfields



For greater efficiency and longer working life, the new Brewster N-95 Drawworks standardizes on Twin Disc Model PO as working clutches, with a 3-plate 30" on the low drum, 2-plate 30" on high drum, and 3-plate 24" as master clutch.

Three Twin Disc Air-Actuated Clutches are used for high torque at low speeds on this Emsco GB-800 Drilling Rig. Twin Disc Air-Actuated Clutches include 3-plate 18" on rotary table, 3-plate 27" on high drum, and 3-plate 24" as master clutches.

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CLUTCHES AND HYDRAULIC DRIVES
TWIN DISC

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Hydraulic Division, Rockford, Illinois

Companies in the News

STANOLIND OIL AND GAS COMPANY has reorganized its exploration districts in a move to strengthen its exploration program. The new arrangement calls for establishing the position of district exploration superintendent in those districts where the size and scope of operations warrants. Men designated as district exploration superintendents will have jurisdiction over all geological, geophysical and land operations within their respective districts. In other districts, either the district geologist or district landman will function as the top man in addition to his other duties. Men who have been promoted to district exploration superintendent and their locations are K. J. Reid, Oklahoma City; G. C. Mahaffey, Wichita; Marvin Whitehead, Shreveport; J. G. Voight, Tyler, Texas; J. M. Reed, Lubbock, Texas; B. F. Baldwin, Albuquerque, N. M.; W. A. Blankenship, Jr., Roswell, N. M.; N. T. Brasher, Midland, Texas; T. S. Yancey, Casper, Wyo.; J. R. Willcockson, Billings, Mont.; J. W. Vanderbeek, Bismarck, N. D.; C. V. Walton, Salt Lake City, Utah; C. R. Barr, Denver, Colo.; L. C. Ritts, Lake Charles, La.; T. D. Barber, Houston; and F. A. Bruner, New Orleans.

Men placed in charge of the other exploration district offices are C. A. Houston, district geologist, Jackson, Miss.; H. S. Edwards, district geologist, Abilene, Texas; A. C. Castle, district landman, San Antonio, Texas; and Caldwell Starkey, district geologist, Corpus Christi, Texas.

•

SHELL OIL COMPANY's Mechanical Engineering department for exploration and production has undergone a reorganization into separate Gas, Technological and Mechanical Engineering departments. **W. B. Golush,** formerly head office gas representative, will be manager of the Gas department. **J. T. Jordan,** formerly chief technologist in New York, will be manager of the Technological department, dealing with oil and gas technology and with tar sands, "in situ" combustion and other special studies. **J. D. Goodrich,** formerly production manager of the North Texas division of the Tulsa area, will be manager of the Mechanical Engineering department, responsible for coordination of mechanical engineering work in the company's various production areas.

•

MID-CONTINENT PETROLEUM CORPORATION and **SUNRAY OIL CORPORATION** have announced plans to merge the two companies. Under the plan, the $458-million merged corporation will become Sunray Mid-Continent Oil Company. After adoption by the two boards of the formal agreement of merger, the plan will be submitted to shareholders with managements' recommendation for approval. The exploration and producing divisions of the two companies will be combined in Sunray's new general office building in Tulsa and will be operated by the parent company. The refining, crude oil pipe line and marketing activities of Sunray Mid-Continent Oil Company will be carried on through a wholly owned subsidiary to be organized as "D-X Oil Company." Sunray Oil Corporation's present refining, pipe line and sales activities will be incorporated into this new D-X Oil Company and headquarters for the refining, marketing and pipe line unit will remain in the Mid-Continent Building in Tulsa. **C. H. Wright** will be chairman and chief executive officer of Sunray Mid-Continent Oil Company; **R. W. McDowell** will be vice chairman of Sunray Mid-Continent and president of D-X Oil Company. **W. C. Whaley** will be president of Sunray Mid-Continent Oil Company. Each will be a director of Sunray Mid-Continent.

•

RICHFIELD OIL CORPORATION has broken ground for a $2.5 million research and development center on a 20-acre site bordering the Santa Ana freeway at the west edge of Anaheim, Calif. The new facilities will include five main buildings and three small, auxiliary buildings, parking areas, utility equipment and landscaping. The project is expected to be completed in a year. Largest of the buildings, a laboratory building, will be approximately 244 by 70 feet. Other main structures will be an administration building, pilot plant building, engine laboratory building and services building.

•

TRANS-TEX DRILLING COMPANY, oil producing and drilling contracting firm with home offices in Longview, Texas, has been reorganized. **HUSKY OIL COMPANY,** of which Trans-Tex is a subsidiary, has purchased the interest of Clifford W. Trice of Longview. Trice, who has been president and general manager of Trans-Tex, has resigned to organize his own drilling and producing company. Trice and associates have announced the organization of **TRICE DRILLING COMPANY.**

•

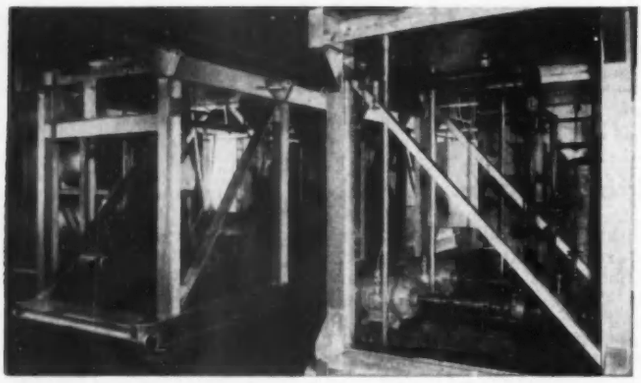
THE HAROLD L. STRADER DRILLING COMPANY has announced its formation in Houston. The firm will specialize in slim hole drilling, core drilling and workovers.

•

MONTEREY OIL COMPANY has purchased all the business and assets of **FULLERTON OIL & GAS CORPORATION,** formerly Fullerton Oil Company. The purchase includes oil and gas properties in California, New Mexico, Oklahoma, Texas and Wyoming and interests in natural gasoline plants in Scurry and Andrews Counties, Texas, and Huntington Beach, Calif.

•

CONTRACT DRILLING DIVISION OF SOUTHERN PRODUCTION COMPANY of Fort Worth has been purchased by **THE OFFSHORE COMPANY** of Baton Rouge, La., a subsidiary of Southern Production.



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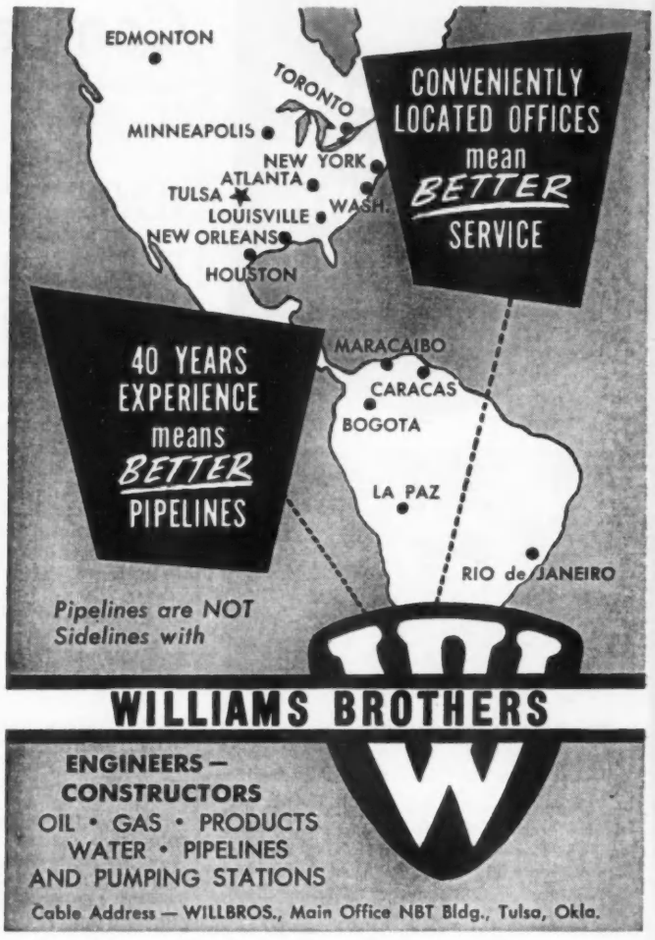

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STANOLIND OIL AND GAS COMPANY has moved its Kansas district production office from Ellinwood to Wichita. Nine employes are involved in the move to Wichita, where the new office is headed by **G. A. YOUNIE,** district superintendent. The Wichita office will be located on the eighth floor of the Schweiter Building. The move is to consolidate district production and exploration offices for Kansas operations in one city.

•

THOS. D. HUMPHREY & SONS, LTD., Dallas-based independent oil operator, held open house recently in the company's suite of offices in the new Republic Bank Building in Dallas. The opening was held in conjunction with the 68th birthday of Thos. D. Humphrey, Sr. In 1953 the present firm was established by Humphrey and his two sons, Robert and T. D. Humphrey, Jr., and a daughter, Mrs. Leroy Newman.

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TIDE WATER ASSOCIATED OIL COMPANY has announced plans to open a district exploration office in Billings, Mont., to supervise operations in Montana and North and South Dakota presently handled from Casper. **B. B. Barber,** landman in Tulsa, is being transferred to Billings where he will be district landman. **Howard J. Speer,** from the Casper, Wyo., office, will be district geologist.

•

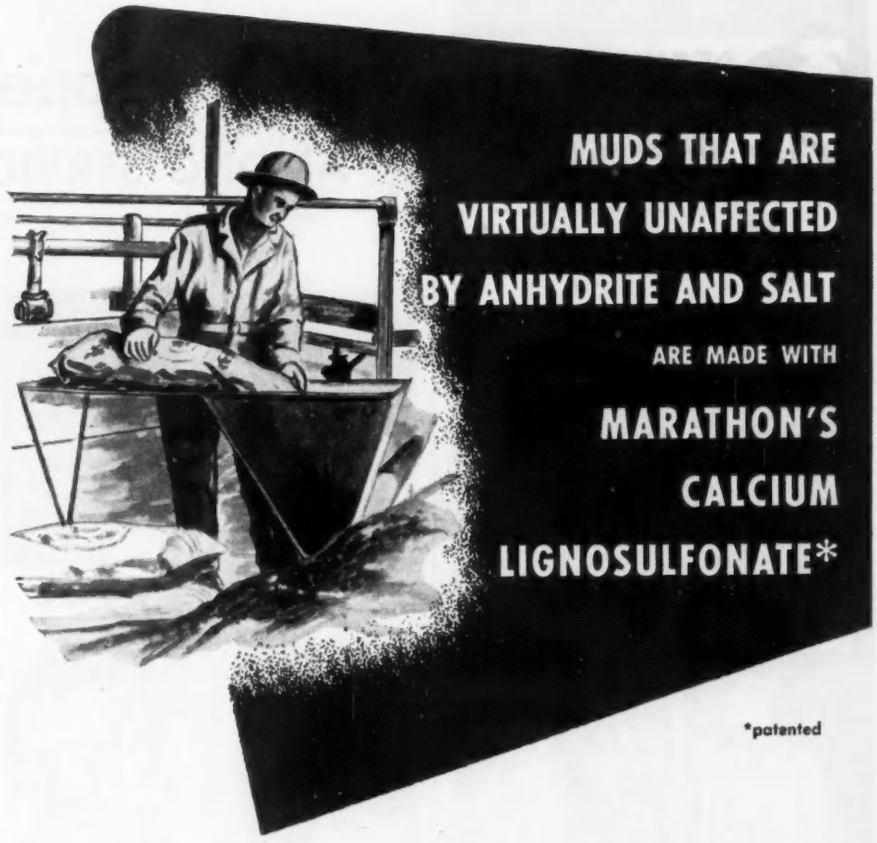
THE OHIO OIL COMPANY has announced plans for the building of a petroleum research laboratory in the Denver area to employ approximately 100 persons. Completion is expected in 1956.

•

LOWE DRILLING COMPANY of Midland, recently organized corporation, has acquired the ten rotary drilling rigs formerly operated by Ralph Lowe individually. The new concern, headed by **C. K. (Ted) Lowe,** as chairman of the board and president, will continue to operate the tools in the West Texas-New Mexico Permian Basin. Other officers are **W. A. (Watt) Taylor,** vice president in charge of contracts and other administrative duties; **N. M. Oates,** vice president and manager of operations; **J. H. Massie, Jr.,** treasurer and assistant manager of operations, and **V. H. (Pete) Van Horn,** secretary and accounting supervisor. **Dalph Lowe** is a director of the new company. Other directors are **C. K. (Ted) Lowe,** Taylor, Oates and Massie.

•

CALVERT DRILLING COMPANY, an Oklahoma corporation, and **CALVERT EXPLORATION COMPANY,** a Delaware corporation, have been merged into **CALVERT DRILLING, INC.** of Olney, Ill. The company operates 12 drilling rigs and production in Illinois, Indiana, Oklahoma, Colorado and North Dakota. The Oklahoma area will continue under the management of **H. K. (Tony) Calvert,** Oklahoma City. The Rocky Mountain area will continue under the management of **Raymond B. Kelly, Jr.** with offices in Denver. **James A. Burhans** manages the office in the Williston Basin area from offices in Bismarck, N. D. In addition, the Transportation division, which formerly operated as a partnership between the company and **Noel Everett,** has been purchased by Calvert Drilling, Inc. Everett continues as general manager.



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What's Happening

AMONG SERVICE AND SUPPLY MEN

W. N. Finnegan

W. F. Taylor

E. R. Phillips

L. A. Myers

George P. Elwood

R. R. Nunn

Terrell Allen, Jr.

Rex H. Fordyce

W. N. Finnegan, former executive assistant at Humble Oil & Refining Company, has been retained by **Oil Center Tool Company in** Houston as a consultant. Finnegan will handle a variety of special assignments for the Houston oil equipment firm. He will have temporary offices at Oil Center Tool Company until his quarters in the Gulf Building are available. Finnegan has been connected with the oil industry for almost 40 years, starting first with The Texas Company in 1916 and joining Humble in 1919.

Bethlehem Supply Company announces the appointment of tubular sales managers for the northern, central and Gulf Coast divisions. **W. F. Taylor** has been appointed tubular sales manager for the Northern division and will have headquarters in Tulsa. Taylor has been with Bethlehem since 1936 and was chief clerk of Tubular Sales department prior to 1949 when he was made manager of refinery sales. **E. R. Phillips** has been appointed tubular sales manager for the Central division with headquarters at the Dallas sales office. Phillips has been with Bethlehem since 1947 and most recently was store manager and field representative at the Grayville, Ill., store. **L. A. Myers** has been appointed tubular sales manager for the Gulf Coast division with headquarters at the Houston division office. Myers has been employed by Bethlehem since 1945, most recently as special representative working out of the Tulsa office. Other personnel promotions made by Bethlehem include **F. C. Beattie**, promoted to special representative for the Oklahoma district; **U. C. Blankenship**, promoted to store manager and field representative at Oklahoma City; **H. M. Braymer**, promoted to machinery sales representative for the West Texas-New Mexico district with headquarters at Odessa; **D. G. Collins**, promoted to store manager and field representative at Grayville; and **H. A. Sumrell, Jr.**, local representative for the Ark-La-Tex district with headquarters at Shreveport.

Ajax Iron Works has announced the appointment of **George P. Elwood** as sales and service representative for the Rocky Mountain area with headquarters in Denver. Elwood has been associated with Ajax since 1950 as sales and service representative in West Texas.

Directo Corporation has announced the promotion of **R. R. (Bob) Nunn** to division manager. Prior to this new appointment, Nunn was sales representative for Directo's hydraulic drilling tools in the West Texas-New Mexico area. His new duties are expanded to include field supervision of operations and service, as well as marketing of Directo products. Nunn will continue to reside in Midland, Texas. **Terrell Allen, Jr.**, has joined Directo as field service representative in the West Texas-New Mexico division and **Rex H. Fordyce** has been assigned to new duties with the firm as project engineer. Fordyce formerly was with Cameron Iron Works in an engineering capacity. He will continue to reside in Houston.

James D. Hughes

Ed T. Landgraff

James D. Hughes, general sales manager and a director of **Lane-Wells Company,** has been made a vice president of the company. Hughes is also vice president and director of Lane-Wells Canadian Company and a director of Well Surveys, Inc. of Tulsa. He joined Lane-Wells Company in 1941 and was Gulf Coast division sales manager in Houston. He was transferred to Los Angeles in 1945 as sales manager and later was made general sales manager and director.

Ed T. Landgraff, export sales manager of **Chiksan Company's** Newark, N. J. office, will make an on-the-spot survey of Chiksan Export Company's Latin American market from February through May of 1955. His itinerary will include Mexico, Panama, Colombia, Venezuela, Trinidad, Brazil, Argentina, Chile, Bolivia, Peru and Ecuador.

General American Transportation Corporation has announced the promotion of **George J. Cassard** to assistant general superintendent of its terminal division. Cassard formerly had been superintendent of General American's Goodhope, La., terminal. Also promoted is **W. J. Wetzel** from assistant superintendent at Goodhope to superintendent of that terminal.

John J. Dixon has succeeded **Frank H. Schwerin** as chief engineer of **Duff-Norton Manufacturing Company.** Dixon joined Duff-Norton in 1943 after serving in the Engineering department of the Edwin L. Wiegand Company. Schwerin is retiring after 36 years with Duff-Norton.

Max Key has been promoted to manager of the Plastics Production department of **The Dow Chemical Company.** He replaces **Dr. William H. Schuette,** recently named assistant to the general manager of **Dow's** Midland division. Key, who has been with the company since 1928, had been assistant production manager in charge of Midland plastics production.

Walter H. Cox has been named manager of the new Tulsa office of the **Dunham Tank Company,** division of Anderson Dunham, Inc. Cox was associated with Oil Well Supply Company for six years, later becoming affiliated with the Conner Tank Company at Casper, Wyo., as sales manager. For the past few years Cox has been with Union Tank Company of Houston, Wichita and Tulsa.

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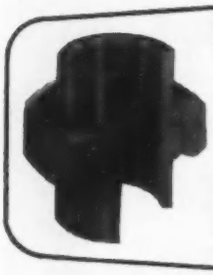

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Board of Directors Meet

Representatives of industry, finance and education attended the recent meeting of the board of directors of Diamond Oil Well Drilling Company in Midland, Texas. Top row, left to right, are Dr. Amos Shaler, Penn State College; Alexander Fraser, former president of Shell Oil Company; William B. Heroy, president of the Geotechnical Corporation of Dallas; Robert N. Arthur, vice president of Mercantile Trust Company of St. Louis and Potosi Investment Company; Henry W. Hoagland, treasurer of American Research and Development Corporation of Boston; E. K. Watters, president of Camco of Houston; James M. Stone, manager of J. K. Smit and Sons of Michigan, diamond tool manufacturers; and William H. Potts, Midland, J. K. Smit and Sons of New Jersey. Front row, left to right: Herman J. Meinert, manager of J. K. Smit & Sons of New Jersey; William H. Pomeroy, Jr., vice president of Diamond Oil Well Drilling Company of midland; Robert W. Stuart, president of Diamond Oil Well Drilling; Kenneth K. Otto, treasurer of Diamond Oil Well Drilling Company; and Piet Smit, president of J. K. Smit and sons companies.

Lane-Wells Company has announced several executive and supervisory changes. **H. M. Rutledge, Jr.**, assistant to Gulf Coast division manager, has returned to his former assignment as division sales manager. **R. E. Bush**, Gulf Coast division sales manager, has been reclassified to assistant to Gulf Coast division manager; **W. A. Johnston**, assistant to the Gulf Coast division manager, transferred to Wichita Falls within the North Central Texas district as district superintendent; **A. L. Boyd**, district superintendent in the North Central Texas district, has been made Houston district superintendent; **D. B. Wheeler**, district superintendent in the Houston district, named assistant to the Gulf Coast division manager.

John D. Russell, formerly manager of engineering, **Joy Manufacturing Company**, has been appointed vice president-engineering of the company with headquarters at Joy's executive offices in Pittsburgh.

Officials Attend Opening

Leading officials of Dresser Industries, Inc., and Clark Bros. Company, a subsidiary, view a picture of a new Clark turbo-charged compressor during the official opening of Clark Bros. offices and warehouse in Tulsa. Left to right, H. N. Mallon, president, and J. B. O'Connor, executive vice-president, Dresser Industries, Dallas; J. N. MacKendrick, Olean, N. Y., president, and W. H. Barnes, Tulsa, district manager, Clark Bros., and E. L. Andrews, director of facilities for Dresser.

Ken Swart

Gil M. Robinson

Marion A. Foreman

Wade W. Hampton

Ken Swart has been appointed chief product engineer for the **H. C. Smith Oil Tool Company.** Swart was associated with the Engineering department of Security Engineering Division, Dresser Industries, Inc., for 19 years. He became chief engineer of that firm in 1945 and vice president of engineering in 1950. From 1950 to 1954 he was consultant for Naval Ordnance Test Station, Pasadena, on problems relating to engineering organization and production engineering.

Gil M. Robinson has been added to the sales force of **McEvoy Company** to give increased sales coverage in the Central Texas area. Robinson will make his headquarters in Abilene, Texas. He previously represented McEvoy as an agent and has served the oil companies in Central and West Texas for a number of years. Robinson recently completed a two weeks' training period in McEvoy's Houston plant.

Wade W. Hampton has been appointed manager of the Southern Region, and **Marion A. Foreman** named manager of the Gulf Coast division of **Hughes Tool Company.** Hampton has been associated with Hughes Tool Company for 36 years and since 1945 has been manager of the Gulf Coast division. He succeeds **Rolla L. Long,** who died January 13. Hampton spent eight years in California and prior to joining the Sales department, he was plant manager of the Houston plant. Foreman, who now heads the Gulf Coast division, has been with the Hughes Tool sales organization since 1937. For the past eight years he has been manager of the Texas-Gulf Coast district. After four years of military service, Foreman returned to service with Hughes in 1945 and was made manager of the Texas-Gulf Coast district in 1946.

Gordon Daniels, development engineer for **Cardinal Chemical, Inc.,** has been transferred from Hobbs, N. M. to offices in Midland, Texas. He will represent Cardinal as sales and development engineer in Midland and Midland County.

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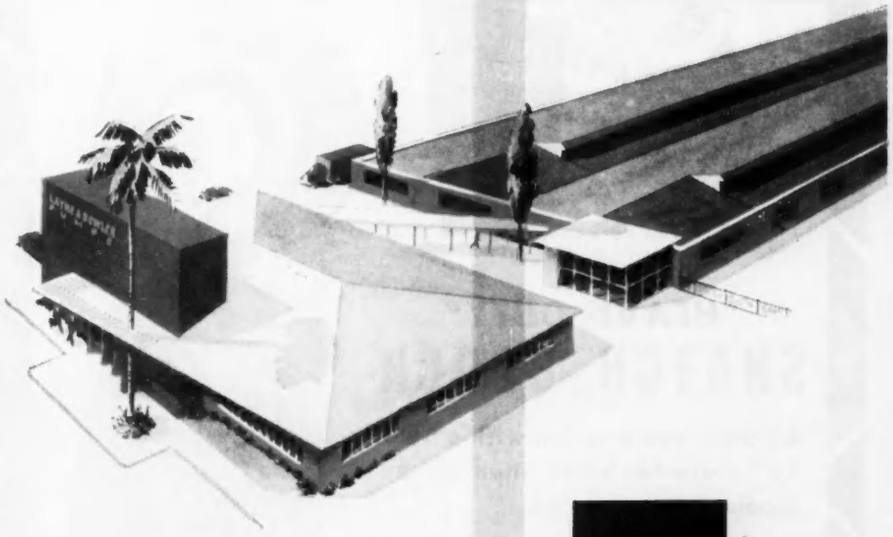

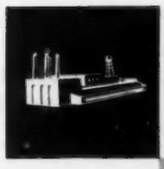

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W. W. Goode

George Decker

D. M. Cowart

J. A. Mullinax

Harry True

C. S. Wentworth

Schlumberger Well Surveying Corporation has announced a number of personnel transfers and promotions in the field and headquarters operations staffs. **W. W. Goode,** former assistant area manager for the Mid-Continent area at Tulsa, has been appointed Permian Basin division manager at Midland, Texas. He replaces **George J. Decker,** who has been transferred to the office of South Louisiana division manager at Gretna, La. **Harry True** has been transferred from Gretna to Tulsa to serve as assistant area manager. In the Southeast area **P. P. Favier** has been named assistant to the area manager at New Orleans replacing **A. H. Curran,** who has been transferred to Canadian operations as manager of the Western Canada division. **D. W. Cowart** has been named technical assistant to the vice president, Operations department, in the Houston headquarters organization. Cowart comes to Houston from Edmonton, Alberta, where he was manager of the Western Canada division. **J. A. Mullinax** has been appointed assistant to the sales manager in Houston and will work on the corporation's advertising program. Before coming to Houston Mullinax was location manager at Farmington, N. M.

Clarence S. Wentworth, manager of **Worthington Corporation's** Detroit district office, has been appointed central region sales manager. Wentworth will succeed **William A. Meiter,** promoted to general sales manager. Wentworth started with Worthington as a service engineer in the Los Angeles district office. From 1929 to 1936 he was a general line salesman in the St. Louis office; then 12 years as regional manager, railroad division, in St. Louis and Chicago. In 1948 he became a general line salesman in the Chicago office and in 1950 was made district manager of the Detroit office.

Frank R. McElroy, assistant general credit manager of **The National Supply Company,** has retired after 42 years with the company. He started with the firm in 1906; resigned in 1910; and returned in 1916. He was made credit manager of the Eastern Division in 1927 and promoted to assistant general credit manager.

Robert H. (Bob) Hume has won the top award for sales managers at **Weatherford Oil Tool Company, Inc.** for his performance as manager of the firm's Southern division during the past year. His headquarters are in Houston.

Lucey Products Corporation has announced the appointment of **William O. (Bill) Timberlake** as manager of machinery sales, following his resignation from Dresser Equipment Company. Timberlake joined the Continental Supply Company in East Texas as student engineer, progressed to district engineer in Kansas, division engineer in Oklahoma and in 1946 to district manager with headquarters at Oklahoma City. In 1948 Timberlake joined Cardwell Manufacturing Company of Wichita as general manager and in 1949 joined the IDECO Division of Dresser Industries.

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J. R. McAlpin

Cecil T. Smith

Howard O. Platt

William B. Heroy

J. R. McAlpin, formerly Houston district manager for **Sheffield Steel Division** of **Armco Steel Corporation,** has been advanced to assistant manager of sales in the territory served by Sheffield's Houston plant. He was succeeded as Houston district manager by **Cecil T. Smith,** district representative. McAlpine replaces **R. W. Davison,** recently appointed manager of sales.

Ajax Iron Works has announced that **Howard O. Platt,** coordinator of sales and engineering, will now make his headquarters in Los Angeles. Until he joined Ajax in 1954, Platt was president of R. B. Moore Supply Company of Bolivar, N. Y. Prior to 20 years service in the supply business, he was a development engineer for Joseph Reed Gas Engine Company.

•

William B. Heroy has been elected to the board of directors of **Diamond Oil Well Drilling Company,** Midland, Texas. Heroy formerly was chief geologist with Sinclair Oil Corporation. He is now president of The Geotechnical Corporation and partner in the geophysical and engineering consulting firm of Beers and Heroy.

•

Rodney V. Dimick has been appointed field representative at Medicine Lodge, Kansas, for U. S. Steel's Oil Well Supply Division. Dimick joined "Oilwell" in 1941 in Ellinwood, Kansas. Since 1950 he has served as field engineer at Great Bend, Kansas.

•

A. A. Mathewson has been appointed assistant to the president of **Borg-Warner Corporation's** Petro-Mechanics Research division, engaged in the development of a sonic oil well drill at North Hollywood, Calif. Recently Mathewson was associated for four years with Albert G. Bodine, Los Angeles, as director and chief engineer of the Soundrive Pump Company, as director and vice president of the Soundrive Process Company, as contract administrator for Soundrive Engineering, and as engineer for the Soundrill Company.

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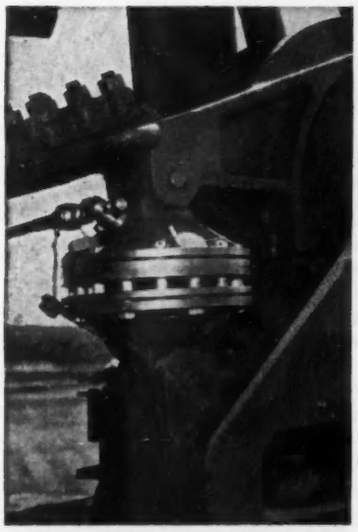

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Clyde M. Saucerman

Kay Peters

Dr. Gordon K. Teal

Hadley A. Reynolds

M. F. Hazel

L. M. Miller

Clyde M. Saucerman has been appointed to the newly-created position of assistant export manager, **McCullough Tool Company**. With McCullough Tool Company since 1945, Saucerman started as a rigman, then operator of an electric line truck. He served as assistant district service manager prior to his appointment to the Export department.

Kay Peters, one of the oldest employes of the **George E. Failing Company** of Enid, Okla., was retired from active service with the company the first of the year. Peters started his career in 1918 as an oil reporter in Garber, Okla. Later he became an oil scout and geologist. He started his employment with the Failing company in the early 30's as a geologist and drilling consultant. During later years he has been director of photography for the company.

Dr. Gordon K. Teal, assistant vice president of Texas Instruments Incorporated, has been appointed to head the Research division of the Dallas-based electronics and geophysics firm. Teal has directed the Materials and Components Research department of Texas Instruments during the past two years.

Hadley A. Reynolds has been appointed a sales engineer for the Shawnee district of **Welex Jet Services, Inc.** Reynolds, who has 15 years experience in the oil country, has been with Welex 3½ years working as a rigger and a shooter.

M. F. Hazel, sales and engineering executive of the **Oil Well Supply Division** of **U. S. Steel Corporation,** has been named vice president—sales. Alex Quayle, formerly chief engineer, succeeds Hazel as director of engineering. Other executive staff changes include **Lloyd E. Tracy,** former vice president—sales, named vice president—merchandise; and **Dan H. Barr,** general merchandise manager, named assistant to the vice president—sales. **Ralph W. Rager,** former vice president—administrative, was appointed vice president—manufacturing; and **Gordon M. Amstutz,** formerly general works manager, assumes the post of assistant to vice president—manufacturing.

L. M. Miller has been appointed eastern regional sales manager for the **Chemical Division of Armour and Company,** with headquarters at North Bergen, N. J. Miller, formerly manager of the division's Market Development department in Chicago, succeeds the late **Kenneth E. Johnson. E. L. Rhoads, Jr.,** assistant manager of the Derivatives department, succeeds Miller as manager of market development. **R. E. Eddy** will assume Rhoads' position in the Derivatives department.

Here it is!
NEW MODEL
series 53
CURTIN
CENTRIFUGES
15 cc size
No. 3420-53
with 7 improvements
• Aluminum castings reduce weight one-third to approximately 5¼ lbs. . . . Diameter of drive shaft increased from 7/16" to 1/2" for added strength . . . Gear train redesigned for more efficient operation . . . Both 15 cc and 100 cc sizes use the same crank . . . Spindle shaft ball bearing mounted, easier to turn . . . Drive shaft of corrosion resistant stainless steel . . . Spindle of corrosion resistant stainless steel.
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DOMESTIC
EXPORT •
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CURTIN
LABORATORY APPARATUS, FURNITURE & CHEMICALS
HOUSTON • NEW ORLEANS
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C. William Zublin

Harold Alford

R. C. Woodward

Robert K. Hoague

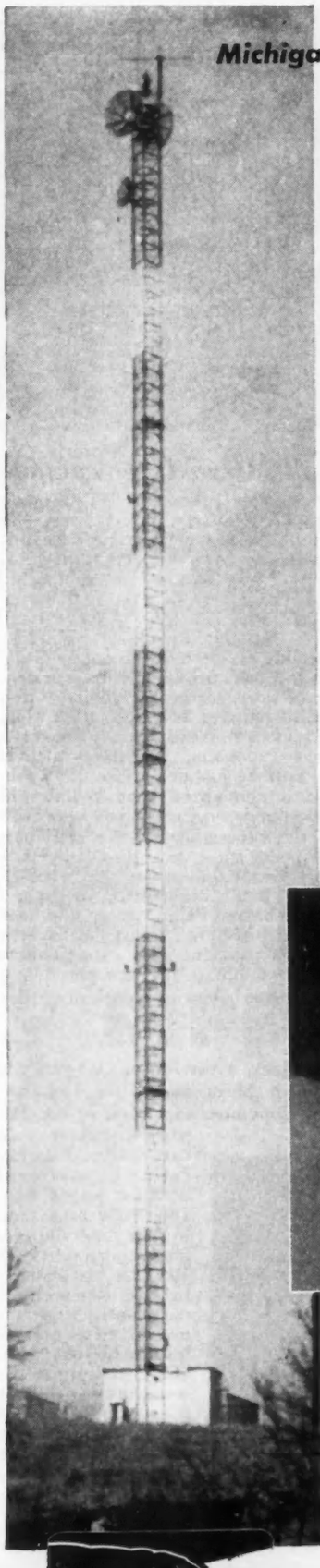
C. William Zublin has been appointed sales manager of **Petroleum Engineering Associates, Inc.** Zublin has been engaged in the petroleum drilling field for the past five years. Formerly he was assistant engineer and field supervisor of Universal Engineering Company of Los Angeles, where he specialized in drainhole equipment.

Harold Alford has joined the **McEvoy Company** as sales representative in the Houston office. Alford has had 11 years experience in the oil field supply business and is former city sales representative for The National Supply Company.

R. C. (Bob) Woodward, chief metallurgist and consulting metallurgist for **Bucyrus-Erie Company** for 20 years, has retired from service with the company. He has had many years experience in cable tool drilling problems and is now prepared to offer part time service as a consultant in the field. Woodward resides in Milwaukee.

Robert K. Hoague has been named public relations and advertising manager at **Weatherford Oil Tool Company, Inc.** Hoague moves up to the top job in the department after serving briefly as assistant manager. He replaces **Frank A. Dunigan, Jr.,** now division manager of the firm's West Texas and New Mexico division.

Frank J. White, general manager of **Bovaird & Seyfang Supply Store,** Bradford, Penn., a division of Dresser Industries, Inc., has retired from office. Management of the Bovaird & Seyfang Supply Store will remain under the direction of Dresser Industries headquarters at Dallas, while actual operations at Bradford will be under the direction of **Robert Slike,** supervisor of oil and gas sales; **Dean Place,** supervisor of industrial sales; and **O. W. Nixon,** supervisor of the store warehouse and Sales Order department.



Michigan-Wisconsin Pipeline Company

Assures power for repeater stations with ONAN Standby Electric Plants

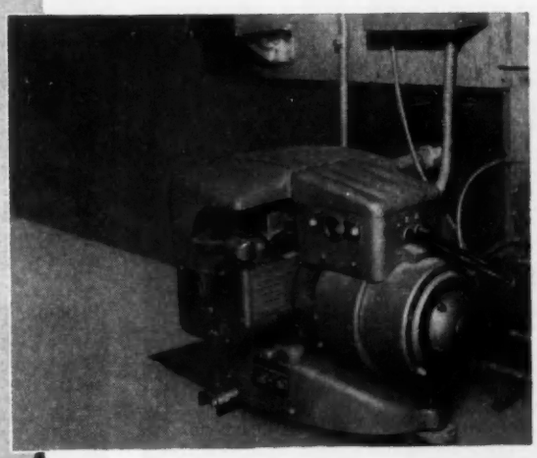
Microwave radio handles communications for the Michigan-Wisconsin pipeline which carries natural gas from Texas fields throughout Wisconsin and Michigan.

Of the 60 repeater stations in the system, 53 are unattended and are equipped with Onan Standby Electric Plants and Onan Automatic Line Transfer Controls. When commercial power is interrupted, the Onan plants start automatically and supply power for operating microwave equipment.

Most of the Onan units are Model 305CK electric plants of 3,500-watt capacity. This model, together with the Onan 5 and 10KW "CW" electric plants have built-in advantages for microwave standby service. They are air-cooled, extremely compact, and dependable.

If you have a problem in standby power, write our sales engineers. Onan builds electric plants for every need . . . from 400 to 100,000 watts.

Onan Model 305CK shown installed in the repeater station at Waukesha, Wisconsin. Bottled gas is used for fuel.



NEW AUTOMATIC MICROWAVE LINE TRANSFER CONTROL

This new control facilitates testing of all control components as well as the engine generator set. Momentary contact switch transfers load from commercial power to the generating plant with only 1/10th second interruption. Generator can be exercised by itself if desired. Control incorporates time-delay starting, stopping Voltage sensitive relays, both on the commercial line and on generator output, assure correct voltage before transferring load.

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Tubokut Wireline Services.....5-1811
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HOBBS
Cecil Horne 3-5396
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Tuboscope JU-0577, MO-4279
KILGORE
Tuboscope..... 5198, 6403, 5218
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Officials Attend Technical Meeting

Key personnel of Tube-Kote, Inc., shown at the first in a series of technical meetings are, left to right standing, Grady Howell, Shreveport; Carol Rosaire, Tulsa; Charles Kerby, Lafayette; Ken Shaver, Houston; Fred R. Hueske, Houston. Bottom row, Bill Borton, Permian Basin; Lynn Edgar, Houston; Larry E. Heinen, president of Tube-Kote; and Gerald Beard, Corpus Christi.

G. V. Woody has been appointed as special assistant to **C. W. Schweers,** vice president, director of sales, General Machinery division, Allis-Chalmers Manufacturing Company. Previously Woody was manager of the firm's Processing Machinery department, a post he has held since 1945. Singleton also announced that **William M. Wallace** would succeed Woody as manager of the Processing Machinery department. Woody came to Allis-Chalmers in 1909. He was engineer in charge of the Centrifugal Pump department, manager of the Wilkes-Barre, Penn. office, and manager of the Pittsburgh office. Wallace has held several positions with Allis-Chalmers including assistant to the vice president of Allis-Chalmers' General Machinery division.

E. S. Steigner, a veteran of 20 years with **Youngstown Sheet and Tube Company,** has been appointed supervisor of the company's newly-organized Service Engineering department. Steigner joined Sheet and Tube as a tester in the metallurgical laboratory in 1934. In 1935 he was assigned to the Research department. After that he worked as a metallurgical tester, assistant metallurgist and metallurgist. In 1949 he was transferred to the Research and Development department as a tubular development engineer and later as a metallurgical engineer.

E. S. Steigner

William J. Sparling has been appointed to the board of directors of **Chain Belt Company.** Sparling will continue as vice president and manager of Chain Belt's Milwaukee operations. Sparling began his career at Chain Belt in 1928 as a student engineer. Later he became works manager, vice president and general manager of the Chain and Transmission division, then vice president.

Spencer H. Mieras and **Kenneth W. Foust** have been elected to the board of directors of **Bonney Forge & Tool Works.** In addition, Mieras was elected executive vice president.

Wayne Gorrell has been transferred from Casper, Wyo., to Denver, where **Johnston Testers** has recently opened a new sales office in the Midland Savings Building.

SAVE MONEY

SAND-BANUM
REMOVES AND PREVENTS BOILER SCALE AND CORROSION
Ounces Only Once a Week for Clean, Efficient Boilers

SAND-BANUM SPECIAL
TABLETS REMOVE AND PREVENT RUST AND SCALE IN ALL RADIATOR COOLING SYSTEMS
In Handy Tablet Form for Easy, Economical Use

AMERICAN SAND-BANUM CO.
Established 1926
9 Rockefeller Plaza
New York 20, N.Y.

Le Grand, Sutcliff & Gell Opens Canadian Company

Le Grand, Sutcliff & Gell Ltd. of England has set up a company in Canada at 58th Avenue, Calgary, Alberta, named Le Grand Limited.

S. C. Cook, who has been with Le Grand, Sutcliff & Gell, Ltd. many years, has been appointed vice president and general manager of the Canadian company. D. J. Elcombe has been appointed chief engineer of the Canadian company.

The Canadian firm will carry a full stock of pumping units, the actual assembly of which will be carried out in Canada. The license of Oil Center Tool Company of Houston, Texas, is extended to cover Canadian operations and Oil Center Tool equipment will be stocked in Canada for sale through Le Grand's supply houses.

Le Grand has also obtained a license from Halliburton Oil Well Cementing Company for the manufacture and sale of some of their products throughout the world except in the U. S. and a similar license agreement has been made with S. C. Carter Company for the manufacture and sale of Carter hydraulic pumping units, except in the U. S.

Halliburton products with which Le Grand Limited will begin operations include HOWCO float collars, guide shoes, float shoes, casing shoes, coupling shoes, liner set shoes, baffle collars, roto-wall cleaners, casing centralizers, formation packer shoes, D. V. multiple stage cementing tools, and measuring devices.

Pelton Water Wheel Company Relocates Mid-Continent Office

Pelton Water Wheel Company has announced the relocation of its Mid-Continent headquarters from Dallas to Tulsa.

Headed by Clyde Lietzow, manager of Pelton's Mid-Continent operations on sales and service activities with warehouse facilities at Hobbs, N. M., and Odessa, Texas, the new office is located at 208 Wright Annex Building in Tulsa.

Failing Supply of Canada Purchased by Oklahoma Firm

The George E. Failing Company of Enid, Okla., a wholly-owned subsidiary of Westinghouse Air Brake Company of Pittsburgh, has purchased from George E. Failing and his brother, Harry Q. Failing, all stock of the George E. Failing Supply Company, Ltd. of Edmonton, Alberta, Canada. (The Canadian company was not included in the purchase made in April, 1953 when Westinghouse acquired all other properties then being operated by the George E. Failing Supply Company.)

The Failing Company was one of the first American firms to establish operations in western Canada when the oil boom got underway there, and much of the exploration work in the area has been done with Failing rigs. The Edmonton store was opened in 1949.

Two branch stores are being operated under the management of the Edmonton Company—one at Regina and the other at Calgary. They will be continued under the new ownership.

Harry Failing, who has managed the Canadian operations for Failing since their beginning, will continue as general manager, and no other changes are contemplated in operating personnel.

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do most users
prefer and buy the genuine
RIDGID
PIPE WRENCH?

It's easiest to work with... perfect balance . . . comfort-grip I-beam handle . . . handy pipe scale on hookjaw . . . easy-spinning adjusting nut . . . clean grip on pipe, no slip or lock.

It lasts longer... first guaranteed housing, won't break or bind . . . ever. Every wrench individually tested before shipment . . . and millions of them in use. Sizes 6″ to 60″—end pattern, 6″ to 36″.

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THE RIDGE TOOL COMPANY • ELYRIA, OHIO, U. S. A.

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Work-Saver Pipe Tools

Dresser and Clark Bros. Open Tulsa Headquarters

Dresser Industries, Inc., and Clark Bros. Company formally opened the first unit of Dresser's new headquarters at 1364 S. Sheridan Rd., Tulsa.

An estimated 400 business leaders visited the new warehouse, service building and the offices of Clark Bros., first Dresser subsidiary to locate facilities at the new Tulsa headquarters. Clark Bros. previously had Tulsa offices at 125 W. 1st Street.

Among dignitaries at the opening were H. N. Mallon, Dallas, president of Dresser, and J. N. MacKendrick, president of Clark Bros., Olean, N. Y.

Dresser Industries owns a 15-acre tract and eventually plans facilities totaling several hundred thousand square feet of floor space.

W. H. Barnes is manager of the Tulsa district of Clark Bros.

Leschen Wire Rope Moves Seattle Warehouse

A new location for the Seattle warehouse and district sales office of Leschen Wire Rope Division, H. K. Porter Company, Inc. has been announced. The new address is 2724 First Avenue South.

The new warehouse is served by a rail siding and has area to store and handle the varied stock of Hercules Red-Strand wire rope required by industry in the Northwest.

United States Steel Supply Opens Sales Office In Dallas

United States Steel Supply, warehousing division of U. S. Steel Corporation, has opened a new sales office in Dallas in the First National Bank building. Charles W. Hopkins, a veteran of 27 years with U. S. Steel, will be in charge and will be assisted by A. R. Schmitt, customer service representative.

C. W. Hopkins

Schmitt comes to Dallas from Pittsburgh where he has been associated with U. S. Steel for 39 years, 22 of them with the supply division.

Vickers Incorporated Expands Brookfield Office

Expansion of scope of operation for the Brookfield, Illinois, sales office of Vickers Incorporated to include responsibility for branch office activities in Tulsa, Oklahoma, and Minneapolis, Minn., has been announced.

Chester F. Lenik will be in charge of the new branch office in Minneapolis as application engineer. Lenik graduated from the University of Detroit in 1949 as an aeronautical engineer. He was a standards engineer at Dearborn Motors prior to joining Vickers in 1951.

Alan R. Wickham will manage the Tulsa office as application engineer. Prior to joining Vickers in 1953 Wickham was active with the Boy Scouts of America.

Joining the Brookfield staff as application engineer is James W. Kelley, formerly of the Tulsa office. He is a mechanical engineer from Oklahoma A & M College who joined Vickers following graduation in 1946.

New Homco Sales Office Opens in Enid, Okla.

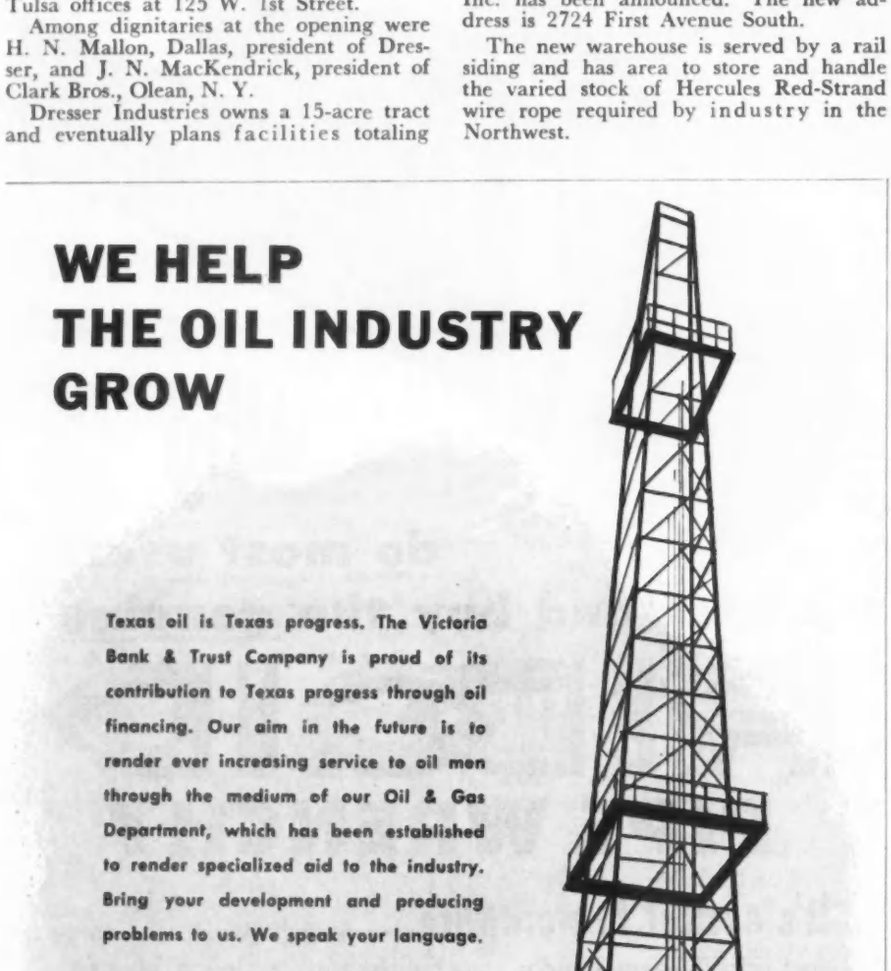
Houston Oil Field Material Company, Inc., has announced the opening of a new sales office in Enid, Okla. H. D. Robinson, former store manager at Sullivan City, Texas, has been transferred to Enid as resident manager for the new location.

The Enid office will operate in conjunction with the Tulsa office of Homco. This office has been open for ten years with Morris Hart as resident manager.

Jones & Laughlin Open New Store In Canada

A new store in Canada at Virden, Manitoba, has been opened by Jones & Laughlin Steel Corporation, Supply Division. It is the latest of five J & L oil country supply stores in the Canadian Dominions of Alberta, Saskatchewan and Manitoba.

Opened in December, the new store is under the local management of Lloyd R. Elston. He is assisted by storeman William Kotyk and salesman H. Carl King with headquarters in Regina, Saskatchewan.


WE HELP
THE OIL INDUSTRY
GROW
Texas oil is Texas progress. The Victoria Bank & Trust Company is proud of its contribution to Texas progress through oil financing. Our aim in the future is to render ever increasing service to oil men through the medium of our Oil & Gas Department, which has been established to render specialized aid to the industry. Bring your development and producing problems to us. We speak your language.
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Dowell Acquires Control Of Latin Service Company

Dowell Incorporated has recently acquired controlling interest in United Oilwell Service, S. A., an important oil field service company by purchasing the interests of Herbert Hoover, Jr.

The concern will operate as a subsidiary of Dowell according to John G. Staudt, executive vice president of Dowell. United Oilwell will perform the same services in South America as Dowell does in the U. S. and Canada. Hoover, formerly president of United Oilwell Service, S. A. offered his interest for sale at the time he was named to be Under Secretary of State because he felt he should have no foreign interests.

Other stockholders are A. A. (Duke) Curtice, international petroleum consultant, and past president of Conorado Petroleum Corporation; Gen. W. Ruby, Salt Lake consulting geologist; and E. A. Pielemeier, vice president of United Geophysical Company, Pasadena, Calif.

Operating authority of United Oilwell will rest with an executive committee of which Staudt will be chairman. Other members are Curtice, Pielemeier, Lester Swan, executive vice president of Brazos Oil and Gas Company, Houston, Texas; and Tromer R. Smith, general manager of United, Caracas, Venezuela.

Atlas Powder Consolidates Explosives Sales Districts

Atlas Powder Company has consolidated its New York and Tamaqua, Penn., explosives sales districts. The new sales area, to be known as the eastern district, will have its headquarters in New York.

James R. Russell, Morristown, N. J., a special sales representative in the New York district since 1950, has been appointed manager of the new eastern district.

W. C. Manning, assistant director of sales for the company, who was formerly manager of the New York district, will handle specialized sales problems in the New York area. He will continue to make his headquarters in New York.

A. F. Hutcheson, manager of the Tamaqua district, will continue as resident manager there, supervising the activities of the Tamaqua office. It will operate as a suboffice under New York.

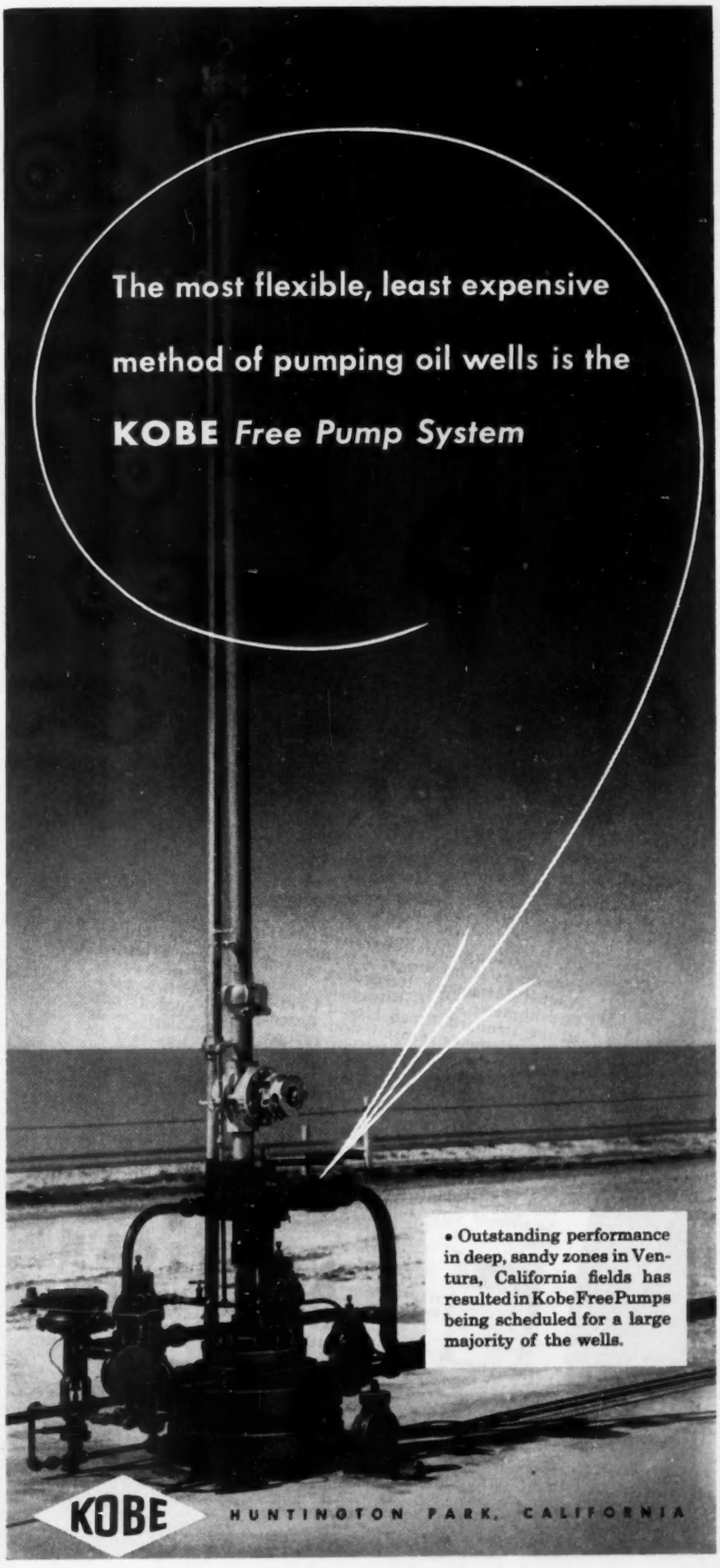
Rogers Geophysical Engaged In Exploration In France

Rogers Geophysical Company has been engaged by the Societe Nationale des Petroles d'Aquitaine to do exploration work in the Bordeaux Basin in France.

Johnny Monkhouse and members of the Rogers crew will arrive in France in February to begin the survey. Equipment was shipped from the Port of Houston January 15.

The Rogers crew will be stationed in Pau. Guy Ratliff will supervise the work in the Bordeaux Basin. Rogers European headquarters is located at 8 rue de Richelieu in Paris. Roger Henquet is Paris representative.

Main offices of Rogers Geophysical Company are in Houston. The company also has offices in Caracas, Venezuela, and Magadiscio, Italian Somaliland.


The most flexible, least expensive method of pumping oil wells is the
KOBE Free Pump System
• Outstanding performance in deep, sandy zones in Ventura, California fields has resulted in Kobe Free Pumps being scheduled for a large majority of the wells.
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HUNTINGTON PARK, CALIFORNIA

Bovaird Supply Elects Directors and Officers

Completing its 84th year of continuous service to the oil industry, The Bovaird Supply Company stockholders held its annual meeting in Tulsa and re-elected the following board of directors: Davis D. Bovaird, president; Roscoe G. Ayers, vice president and general manager of sales; R. M. McMahan, Secretary; R. E. Batchelor, general manager of stores; A. E. Booth of Bradford, Pa., and Bradford J. Williams of Tulsa.

The directors re-elected T. H. Trower as treasurer and M. B. Park as assistant secretary-treasurer. It was the largest stockholders meeting the company has held, and all of the district managers were in attendance. Reports were made on senior departments by Ayers, McMahan, Batchelor, William J. Bovaird and Trower.

District managers attending the meeting were F. J. Robbins, Oklahoma territory; F. H. Rudrauff, Illinois; R. W. Robbins, Kansas; R. E. Whitten, Texas Panhandle; and J. A. Kennedy, West Texas and New Mexico.

Company Plane Increases Customer Service

S. R. Bowen Company has inaugurated airplane facilities for providing customer service and assisting company personnel. The airplane service enables the company to move special equipment to outlying rental departments and for transporting special equipment requiring services of the Engineering department and manufacturing facilities at Santa Fe Springs, Calif. Company air transportation also makes it possible for personnel associated with foreign drilling operations to visit the S. R. Bowen plant in California.

Byron Jackson Licenses Jet Perforating Process

Byron Jackson Company has just completed negotiations under which Halliburton Oil Well Cementing Company is being licensed to use the jet method of perforating oil well casing.

The jet process is a development of the "shaped charge" perfected during World War II for the famed anti-tank bazooka. Following the war Byron Jackson Co. and Welex Jet Services, Inc. became co-developers in adapting the principle to the improvement of perforating oil well casing and fracturing tight oil bearing formations to increase production.

Southern Engine and Pump Opens Branch Office

Southern Engine & Pump Company announces the opening of its eighth branch office located at 1159 Liberty in Beaumont, Texas.

S. J. Jamison, Jr.

S. J. (Jim) Jamison, Jr., has received appointment as manager of the new office. Jamison has had varied experience in equipment sales and engineering and recently finished specialized training at Southern Engine & Pump Company's Houston headquarters.

Worthington Corporation Relocates Detroit Office

Worthington Corporation has moved its Detroit district office from 2824 East Grand Boulevard to 13305 Puritan Avenue. Clarence S. Wentworth, Central sales manager for the firm, whose Detroit office handles sales throughout Michigan, said the move will represent an expansion of nearly 100 percent over their existing facilities in the machinery building.

ARCCO
NOW SPECIFIC GRAVITY RECORDING OF LIQUIDS AT ANY DISTANCE
RECORDING TRANSMITTER
Accurate long-distance transmission of specific gravity recordings is no longer a problem with the new Arcco-Anubis Metameter Recording and Transmitting Liquid Gravitometer. This instrument combines the mechanism of the standard Arcco Liquid Gravitometer with a metameter telemeter transmission system which records and transmits the specific gravity record to control room or other remote location. The interconnecting line may be any two-wire electrical circuit or its equivalent: private wires, telephone circuits, carrier current channels, or radio (VHF or UHF).
The range of the standard instrument is .15 or larger, but instruments with ranges of .10 or .05 can be supplied. Specific gravity charts are available for many gravity ranges, and special degree A.P.I. charts can be furnished at slight additional cost. Request Bulletin No. 111-R2B for complete details.
RECORDING RECEIVER
AMERICAN RECORDING CHART CO.
3113 E. 11th St. • Los Angeles 23, Calif.
SEND FOR BULLETIN No. 111R2B

Receives 25-Year Pin

R. E. Kimsey, manager, Western Region, Hughes Tool Company, receives a 25-year service pin from M. E. Montrose, vice president-sales recently at Midland, Texas.

McCullough Tool Opens Service Branch at Abilene

McCullough Tool Company has opened a new service branch at Abilene, Texas. The new branch is located at 1845 South Treadway Street in Abilene, and is staffed with experienced personnel completely trained in the use of all McCullough tools and services.

James Northcott has been placed in charge of the Abilene service location as branch manager. Northcott was transferred from McCullough's Cisco branch where he had also served as branch manager. Among the other personnel at the new branch are Bobby Coy Lee, salesman; Richard Heine, operating engineer; John Hays, Jr., senior operator; and Elton Sanders, shop foreman.

Caterpillar Tractor Establishes Parts Depot

Caterpillar Tractor Co. has established a new parts depot in Los Angeles to provide emergency overnight service to its distributors in southern California, southern Nevada and Arizona.

James Busey, who joined Caterpillar as a Parts department employe 18 years ago, and for the past three years has managed a similar parts depot at St. Paul, Minn., has been named manager of the southern California depot. He will be assisted by Robert Webster, who joined the Company in 1940, and has been an export parts supervisor at Peoria, Ill., for the last three years.

The Los Angeles depot, which went into operation November 29, 1954, provides 40,000 square feet of floor space for the storing and handling of parts.

It is the ninth such depot in the Caterpillar organization, others being located at Atlanta, Ga.; Shreveport, La.; Albany, N. Y.; Indianapolis, Ind.; St. Paul, Minn.; Kansas City, Mo.; Denver, Colo., and Spokane, Wash.

Emsco Manufacturing Buys Johnston Pump Company

Johnston Pump Company has entered into a contract providing for the sale to Emsco Manufacturing Company, Los Angeles, of most of the assets of Johnston Pump Company. Emsco is a manufacturer of oil country drilling and pumping machinery and equipment. Approximately 85 percent of the outstanding stock of Emsco is owned by Youngstown Sheet and Tube Company and its wholly owned subsidiary, Continental Supply Company.

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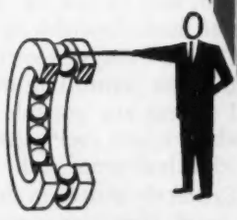
YOUR FIRST CHOICE

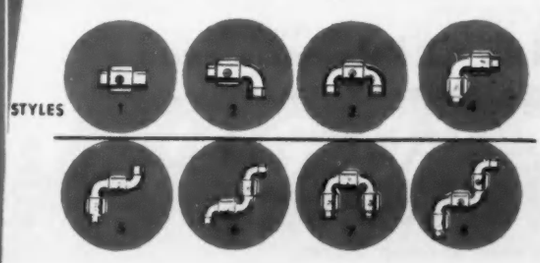
TYPE LPR BALL BEARING SWIVEL FITTING

extra years of SERVICE

Rig it up and forget it. EMSCO Ball Bearing Swivel Fittings are designed with built-in stamina for the toughest jobs, conservatively rated with an unusually high safety factor. Examine EMSCO Fittings — compare their easy turning quality. Compare the patented method of sealing against leakage. Compare prices. Regardless of the application, order EMSCO for your next job. You'll get years of extra service. TO ORDER: Simply state type of application, pressure, temperature, pipe size and desired ends.



THRUST BEARINGS FOR THRUST LOADS.



EMSCO

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Representatives in principal cities

New Books, Maps and Movies

GEOLOGIC MAPS, Publications Section, Geological Survey, Indiana Department of Conservation, Indiana University, Bloomington, Ind.

Four new geologic maps now available at the above address are as follows:

Preliminary Coal Map No. 2, Distribution, structure and mined areas of coals in Sullivan County, Ind. 50 cents.

Preliminary Coal Map No. 3, Distribution, structure and mined areas of coals in Pike County, Ind. 50 cents.

Coal Investigations Map No. C 11, Geology and coal deposits of the Dugger quadrangle, Sullivan County, Ind. (published by the U. S. Geological Survey in cooperation with the Indiana Geological Survey) $1.50.

Coal Investigations Map No. C 17, Geology and coal deposits of the Shelburn quadrangle, Sullivan County, Ind. (published by the U. S. Geological Survey in cooperation with the Indiana Geological Survey) $1.50.

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GEOLOGY OF PETROLEUM, A. I. Levorsen, W. H. Freeman and Company, San Francisco, 1954. $8.

This book is intended primarily for students who have had the basic courses in geology, and also for petroleum geologists who are actively exploring for oil and gas pools. The book includes some of the practical applications, along with the theoretical analyses, of the geological elements involved in petroleum exploration. The order of presentation of material is, first, the reservoir, with particular emphasis on the trap; next, the reservoir conditions of temperature and pressure and the different reservoir fluids; then the speculative ideas on origin, migration and accumulation; and finally, some of the ways of applying what has been considered in the search for new pools and provinces. This 703-page book has extensive references, a glossary of petroleum exploration, tables and abbreviations used on logs and scout reports.

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TWENTIETH CENTURY PETROLEUM STATISTICS, Tenth Edition, DeGolyer and MacNaughton, 5625 Daniels Avenue, Dallas, Texas.

DeGolyer and MacNaughton, consulting geologists and petroleum engineers, Dallas, have published *Twentieth Century Petroleum Statistics, 1954.* It is the tenth edition of the reference book, which was prepared initially in 1945 by the Office of the Director of Naval Petroleum and Oil Shale Reserves, Navy Department, Washington, D. C.

The Director, Commodore W. G. Greenman, U. S. Navy, requested that the handbook be maintained on an annual basis, for demand indicated that a practical need was filled by it. DeGolyer and MacNaughton therefore have been publishing the handbook as a ready reference to members and students of the petroleum industry. It contains salient statistics of the petroleum industry of the world and of the U. S.

Data are given on natural gas production, reserves, and consumption, as well as on petroleum production, reserves, demand, refining, transportation, prices, etc. Some of the figures show world data by countries and U. S. data by states.

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OIL & GAS FORMS, Texas Railroad Commission, Oil and Gas Division, R. W. Byram & Company, Austin, Texas.

Forms required by the Texas Railroad Commission for reporting various operations of the oil and gas industry create many problems. The Railroad Commission

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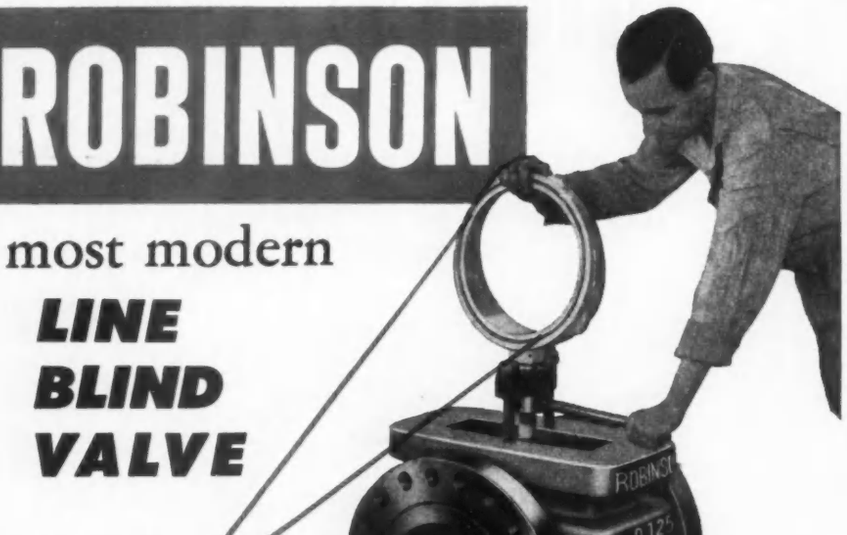

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of Texas has adopted many forms for reporting on various phases of these operations and the "Forms Book" just published supplies each operator a source from which he can determine which forms to file and how to make them out. There is a picture of each of the 80 forms used with instructions for filling it out.

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A SURVEY OF RESISTIVITIES OF WATER FROM SUBSURFACE FORMATIONS IN WEST TEXAS, Permian Basin Chapter of AIME, P. O. Box 1858, Midland, Texas. $1.50.

This is a tablet-form booklet of water resistivities based on a survey of the Permian Basin of West Texas. Compiled by the West Texas Water Resistivity Sub-Committee and published under the auspices of the Permian Basin Chapter of AIME, the booklet contains the following data on nearly 1000 producing formations: field name, county, company, lease, well number, survey, block, section, depth, source of sample and water resistivity at 75 degrees F.

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GEOLOGY AND MINERAL DEPOSITS OF BARSTOW QUADRANGLE, SAN BERNARDINO COUNTY, CALIFORNIA, Oliver E. Bowen, Jr., Division of Mines, State of California, Department of Natural Resources, San Francisco. $3.

Barstow quadrangle, an area in the Mojave Dessert, is the subject of a new report just issued by the Division of Mines. The Barstow quadrangle lies in San Bernardino County in the heart of the Mojave Desert, and embraces nearly a thousand square miles. The report is one of the few detailed studies published concerning the geology and mineral deposits of this region. Accompanying the main article is a short paper, "Thermal Properties of Ceramic Materials from Barstow Quadrangle, California." The report presents the results of some laboratory tests of some peculiar ceramic materials found in the area.

Bulletin 165 is priced at $3 plus 3 percent tax for California residents. The two maps and a series of structure sections may be purchased separately for $1 plus tax. Copies may be secured over-the-counter at the Division of Mines offices in the Ferry Building, San Francisco 11; in Los Angeles at 217 West First Street; in Sacramento in the Divisions Office, State Office Building. Mail orders can be filled from the San Francisco offices.

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FOREIGN OIL AND THE FREE WORLD, Leonard M. Fanning, McGraw-Hill Book Company, 330 West 42nd Street, New York 36, N. Y. $6.

The author presents a human interest story of the increasing dependence of the U. S.—no longer self-sufficient in petroleum—upon foreign oil, a strategic material all important to her economy and safety. The story is told against a background of history, stirring American pioneering, international power politics, rampant nationalism and Communist intrigue. From it the picture of the meaning of oil emerges in relation to economic welfare, defense in time of war, and social advantages to all nations and people. This is the story of how American oil companies are operating overseas. It shows why foreign oil development is a risky and expensive undertaking requiring patience, money and diplomacy. The book includes accounts of the pioneers in foreign petroleum development and of the men carrying on this work.

The author brings expert analyses of events having far-reaching effects on foreign oil—the expropriation of Mexican oil lands, Venezuela's initiation of 50-50 profit sharing, the settlement of the three-year Iranian oil dispute, and many other important happenings in the complex international oil picture.

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PRODUCTION HISTORY OF THE PRINCIPAL OIL PRODUCING FORMATIONS IN ARKANSAS, LOUISIANA, MISSISSIPPI, NEW MEXICO AND TEXAS, Second National Bank of Houston, Oil and Gas Department, Houston, Texas.

Information from the AIME publication, "Statistics of Oil and Gas Development and Production Through 1952" plus additional facts from the Texas Railroad Commission have been combined and rearranged in this publication. Production history is given for 18 principal oil producing formations. Statistics include name of field, county, year of discovery, area of proved acres, production to end of 1952, wells producing in December 1952, gravity API, character of formation, percent of porosity, average net production thickness in feet. Using the foregoing data, recovery in barrels per acre and barrels per acre foot were calculated for each field. The booklet is free upon writing to the Oil and Gas Department.

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"Why don't they hurry up with that rig?"

Crude Lover

"Do you really love her?"

"Do I love her? Why I worship the ground her father struck oil on!"

Heaven Can Wait

The Sunday school teacher had just finished describing the beauties of heaven. "Now," she said, "all you children who want to go to heaven, put up your hands."

Only one child—a small boy—failed to respond with an upthrust hand.

"Why aren't you ready to go to heaven?" the teacher asked him.

"Well," the little boy said, the sign of struggle on his face, "I've got two rabbit traps set."

Habitual Drunk

Wife to husband who had a few drinks too many: "If it were the first time, Henry, I could forgive you, but you came home like this in November, 1916."

Penny Wise

A dollar and a penny met. The penny had a bright, clean face; the dollar was dirty but proud.

"You think you are gold, but you are only cheap metal," said the dollar. The penny replied, "I am what I am and claim to be no more."

The dollar swelled up with pride and said: "I am patriotic, I am trustworthy, I have the emblem of liberty on my bosom,

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